UCRL-AR-125915-06-4

Environmental Protection Department
Operations and Regulatory Affairs Division

Lawrence Livermore National Laboratory Experimental Test Site 300

Compliance Monitoring Report for Waste Discharge Requirements 96-248

Fourth Quarter/Annual Report 2006

Author

Richard Brown

Water Guidance and Monitoring Group

Lawrence Livermore National Laboratory
University of California, Livermore, California 94551

This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

Certification

I certify that the work presented in this report was performed under my supervision. To the best of my knowledge, the data contained herein are true and accurate, and the work was performed in accordance with professional standards.

Richard G. Blake 2/20/07

Richard G. Blake Date
California Registered Geologist
No. 5550
License expires: July 31, 2008

WGMG07:017:SSG:RAB:mdv

Table of Contents

List of Figures

Appendices

List of Abbreviations and Acronyms

3CMP	samples collected at Site 300 for Compliance Monitoring Program
3EMG	samples collected at Site 300 for the Water Guidance and Monitoring Group
3GIV	samples collected at Site 300 for site investigations
3VES	three casing volumes purged using an electric submersible pump
BCLABS-BAK	BC Laboratories, Inc. in Bakersfield, CA
BOD	Biochemical oxygen demand
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMP	Compliance Monitoring Program (conducted under CERCLA)
CMR	Compliance Monitoring Report (prepared under CERCLA)
CoC	(or COC) chain-of-custody form
CVRWQCB	Central Valley Regional Water Quality Control Board
DO	dissolved oxygen
DSWP	sewage percolation pond influent sampling location
DTW	depth to (ground)water
EC	electrical conductivity, or specific conductance
ESWP	sampling location within sewage evaporation pond
GF	Grundfos pump
FRUITGROWL	FGL Environmental Laboratories in Stockton, CA
ft	feet
gal	gallons
gpm	gallons per minute (measurement of flow)
GWE	Ground water elevation (above mean sea level)
HSU	hydrostratigraphic unit
ID	identification number
ISWP	sewage evaporation pond influent sampling location
LLNL	Lawrence Livermore National Laboratory
MCL	maximum contaminant level (for drinking water)
mL	milliliters

List of Abbreviations and Acronyms (concluded)

MPN	most probable number
MRP	monitoring and reporting program
mV	millivolts (measure of oxidation-reduction potential)
NA	not applicable
ND	none detected, or not detected
NO_3	nitrate
NR	analysis not required by Permit at this sampling location
pH	measure of the acidity or alkalinity of a solution
OG	off gassing measured by scale of 1-5, 5 being high amounts of off gassing
OU	Operable Unit under CERCLA
Q	flow rate, or number of well volumes purged (according to context)
Qal	Quaternary Age alluvial deposits
QC	quality control
Qt	Quaternary Age terrace deposits
SC	electrical conductivity, or specific conductance (same as EC)
SHO	short analytical holding time (such as samples for coliform bacteria analyses)
VOA	samples collected for analysis of volatile organic compounds
WDR	waste discharge requirements (Permit)

Executive Summary

This report contains the elements required by Waste Discharge Requirements (WDR) 96-248 (Permit) for the combined 2006 fourth quarter and annual report. This is the eleventh annual report prepared under this Permit. Compliance monitoring networks discussed in the report include:

- Wastewater monitoring for the sewage evaporation and percolation ponds (in **Sections 2.1**, **2.2**, and **2.3**)
- Ground water monitoring for the sewage evaporation and percolation ponds (in **Sections 2.4** and **2.5**)
- Observations at the percolation pits (in **Section 3.0**).

Monitoring data indicated compliance with the limits for the ground water and wastewater at the sewage evaporation and percolation ponds. No data gaps were identified and there are no obvious impacts to ground water around the sewage ponds in 2006.

None of the permitted mechanical equipment percolation pits overflowed during 2006.

1. Introduction

This report satisfies the 2006 combined fourth quarter and annual monitoring and reporting requirements of the Central Valley Regional Water Quality Control Board's (CVRWQCB) *Waste Discharge Requirements* (WDR) 96-248, hereafter Permit (CVRWQCB, 1996). It details the monitoring results of one compliance monitoring network and visual observations at a second wastewater disposal system.

The first network analyzes samples of ground water beneath, and wastewater discharged into, sewage evaporation and percolation ponds (ISWP) (sewage ponds) where sanitary waste is treated. The second network entails visual monitoring of five percolation pits that receive mechanical equipment wastewater.

The Experimental Test Site (Site 300), operated by Lawrence Livermore National Laboratory (LLNL), is located in the Altamont Hills approximately 10.5 kilometers (6.5 miles) southwest of the city of downtown Tracy, California. **Figure 1** shows the locations of the equipment percolation pits in the Explosives Process Area and the sewage ponds in the General Services Area.

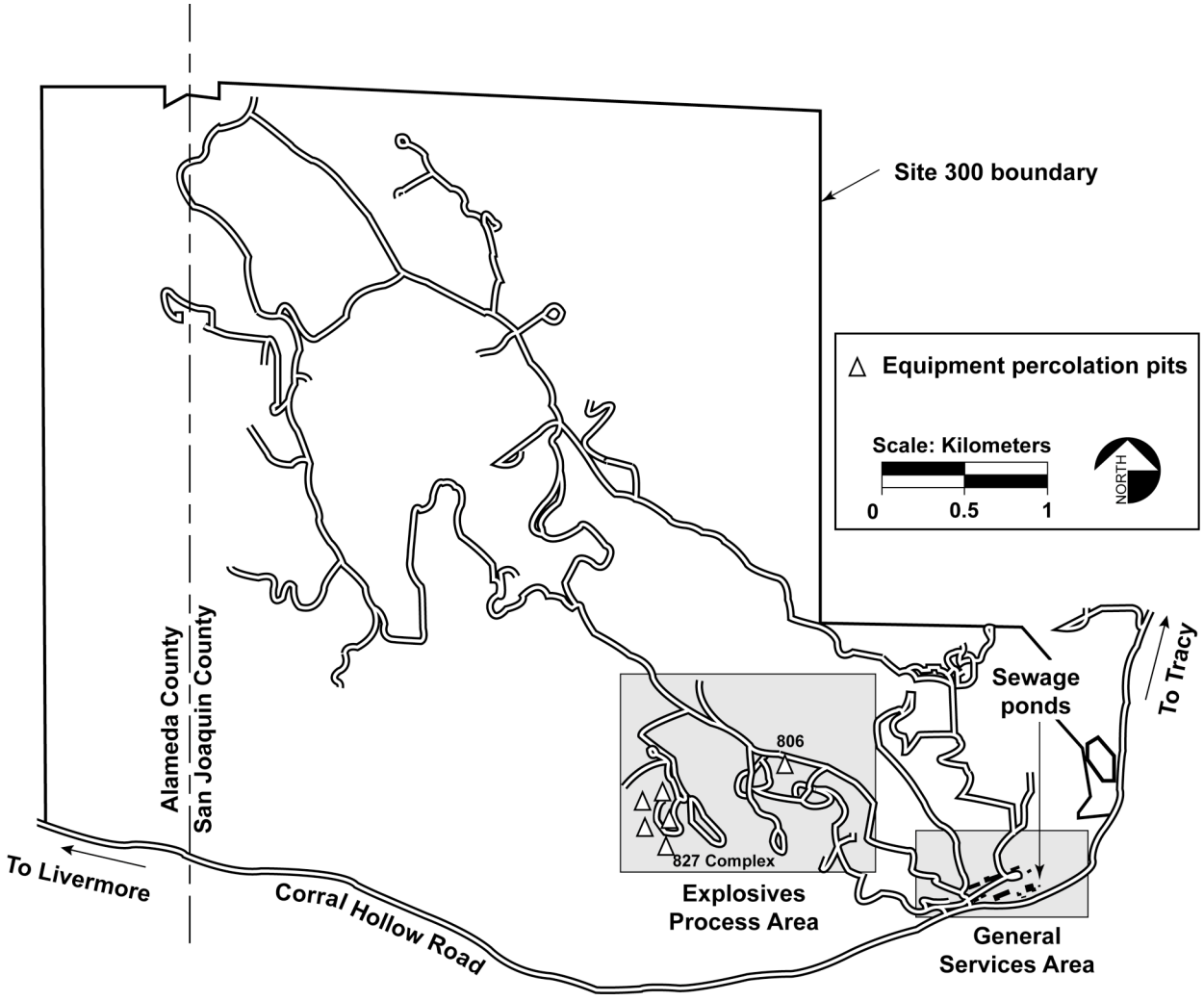

Figure 1. Location of sewage evaporation and percolation ponds and equipment percolation pits.

2. Sewage Evaporation and Percolation Ponds

2.1. Compliance Monitoring Program

Monitoring required for the sewage ponds is specified in the Monitoring and Reporting Program (MRP) 96-248, Revision 2 (Condon, 2006), of the Permit. Applicable reporting requirements are found in the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements* (CVRWQCB, 1991) and in the MRP.

Quarterly samples of wastewater flowing into the sewage evaporation pond are collected for analysis by grab sampling from a location west of the pond (sampling location ISWP in **Figure 2**). ISWP is a manhole that captures all waste streams before they flow into the pond. The samples are analyzed for electrical conductivity (EC, also known as specific conductance), pH, and biochemical oxygen demand (BOD).

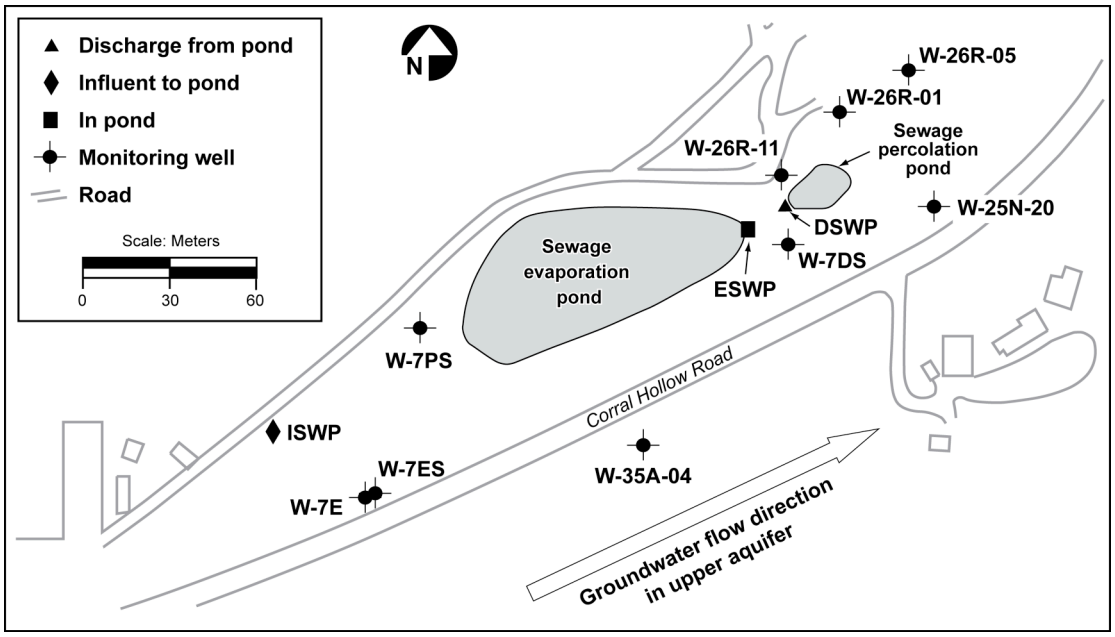

Figure 2. Site 300 sewage evaporation and percolation ponds and ground water and wastewater compliance monitoring locations.

Quarterly wastewater samples of the pond contents are collected by grab sampling from a dock at the eastern end of the sewage evaporation pond (sampling location ESWP) and analyzed for pH, EC, and dissolved oxygen (DO). Any discharge from the sewage evaporation pond to the sewage percolation pond (sampling location DSWP) is grab sampled and analyzed for BOD, EC, total and fecal coliform bacteria, and pH.

Observations of the pond are made and recorded at least monthly for freeboard, color, odor, and levee condition. **Appendix A** contains the fourth quarter field observation logs for the sewage ponds. Some animal burrows were observed in the levee from time to time. These burrows

continue to be monitored by operations personnel to ensure that the integrity of the levee is not compromised.

Leak detection and monitoring compliance at the sewage ponds is accomplished by monitoring the shallow ground water beneath and adjacent to them. Ground water monitoring includes semiannual sampling and analysis of the collected samples for EC, nitrate, total and fecal coliform bacteria, and pH. Ground water elevations are routinely recorded and contoured. **Figure 2** shows the locations of the monitor wells with respect to the ponds. Specifications for each well are given in **Appendix B**.

2.2. Wastewater Sampling and Analysis

Calibration is performed on DO, EC, and pH meters less than 12 hours before sampling. DO, EC, pH, and temperatures of the samples are measured and written on the field tracking forms (field logs) when the grab samples from ISWP, ESWP, and DSWP are collected. Chain-of-custody (CoC) forms are filled out appropriately and signed by the sampler for each analytical laboratory to which the samples are transferred; CoC numbers are also written on the field logs. Analytical methods used are appropriate EPA-approved Methods (U.S. Environmental Protection Agency 2005) or Standard Methods (Clesceri *et al.,* 1998).

Fourth quarter samples from locations ISWP and ESWP were collected on November 15, 2006. Wastewater samples are collected, analyzed, and results entered into the Environmental Protection Department's database according to a complete set of written protocols known as the *Environmental Monitoring Plan* (Woods, 2005).

2.3. Wastewater Monitoring Results

All required wastewater monitoring parameters for the sewage ponds were in compliance with the Permit's provisions and specifications throughout 2006. **Appendix C** contains the logs including field measurements for fourth quarter wastewater monitoring. There was one discharge that occurred during the first quarter (**Table D-4**) from the evaporation pond to the percolation pond during the year (Brown 2006). Historical plots for all monitoring data and tabular summaries of the 2006 data are included in **Appendix D**.

2.4. Ground Water Sampling and Analysis

Semiannual sampling of ground water from wells at the sewage evaporation pond was conducted during the first and the third quarters of 2006. Ground water samples were collected, analyzed, and results entered into the Environmental Protection Department's database according to a complete set of written protocols (Goodrich and Wimborough, 2006). The monitor wells were purged and sampled according to prescribed methods assigned to each monitor well. The collected samples were transferred to an offsite analytical laboratory for analyses of EC, nitrate, and pH, as well as other analyses specified by the ground water monitoring field logs. Following the initial sampling event, each well was treated with a pre-calculated dose of chlorine and pumped to circulate the chlorine throughout the water column. On the following day, wells were purged and tested for residual chlorine and samples were collected and analyzed for total and fecal coliform bacteria at an offsite analytical laboratory. Wells that tested positive for chlorine were pumped until chlorine was not detected prior to sampling, according to the aforementioned written protocols.

2.5. Ground Water Monitoring Results

Semiannual ground water samples were collected and analyzed during the first and third quarters of 2006. All monitored parameters were in compliance with the Permit limits during 2006. No coliform bacteria was detected in any ground water samples and concentrations of nitrate detected in ground water samples collected and analyzed in 2006 remained below the drinking water maximum contaminant level (MCL) of 45 mg/L for all nine wells in the monitoring network. For each monitor well in 2006, concentrations of nitrate detected in the samples collected were approximately equal to the mean concentration of nitrate detected over the monitoring history.

Historical data plots and tabular annual summaries of the analytical data are included in **Appendix E.** Historical concentrations of nitrate (as NO_3) in ground water upgradient of both sewage ponds in this network have ranged from < 0.4 mg/L in monitor well W-7E to 26.9 mg/L in monitor well W-7PS (in August 2001). Historical concentrations of nitrate in ground water samples collected downgradient of both sewage ponds have ranged from < 0.44 mg/L to 54.5 mg/L in monitor well W-26R-05 in August 2001. LLNL will continue to monitor these wells and any discharges into the percolation pond.

Appendix F contains the ground water elevation contour maps (Dibley et al. 2007) for the shallowest ground water zones (Hydrostratigraphic Units [HSUs]); these maps were produced for the LLNL activities conducted under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) for the Compliance Monitoring Program (CMP). The CoCs and laboratory analytical results are stored at LLNL and are available upon request.

3. Percolation Pits

MRP 96-248 requires monthly inspections of the percolation pits at Buildings 806A, 827A, 827C, 827D, and 827E (see **Figure 1**). Sampling and analysis for metals are required whenever an overflow occurs. There were no overflows from any of the permitted percolation pits to the ground surface during 2006, although there may be standing water that has yet to percolate in some of the percolation pits at any given time. **Appendix G** contains the fourth quarter field observation logs for the percolation pits.

References

Brown, R. (2006a), *LLNL Experimental Test Site 300 Compliance Monitoring Report for Waste Discharge Requirements 96-248, First Quarter 2006,* Lawrence Livermore National Laboratory, Livermore, CA (UCRL-AR-125915-06-1).

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Clesceri, L.S., Greenberg, A.E., and Eaton, A.D., Ed. (1998), *Standard Methods for the Examination of Water and Wastewater*, 20th ed.

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U.S. Environmental Protection Agency (2005), *Title 40 Code of Federal Regulations, Part 136*.

Woods, N., Ed. (2005), *Environmental Monitoring Plan*, Operation and Regulatory Affairs Division, Environmental Protection Department, Lawrence Livermore National Laboratory, Livermore, CA (UCRL-ID-106132, Rev. 4).

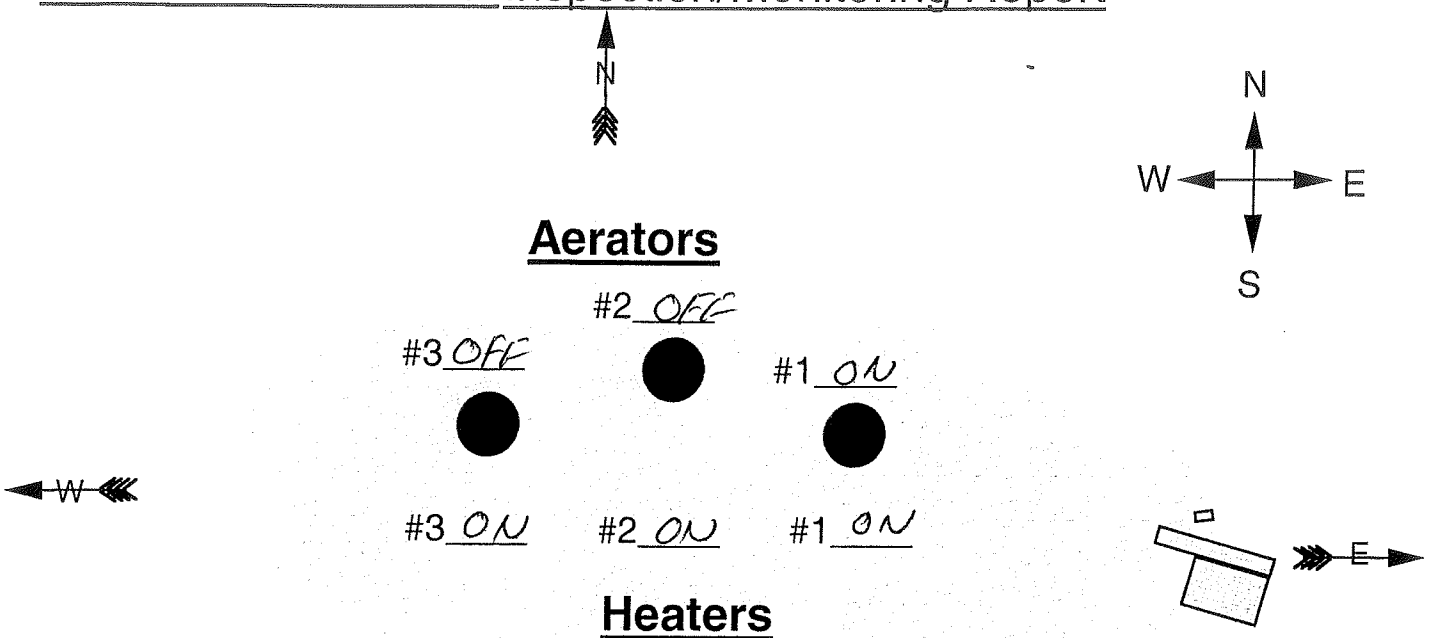
Acknowledgments

The compliance monitoring program for WDR 96-248 could not be conducted without the dedicated efforts of many people. LLNL sampling technologists sampled the wastewaters, coordinated by Bob Williams, and the monitor wells, coordinated by Eric Walter, and packaged the samples for shipment to the off-site analytical laboratories. Off-site analytical support was provided by BC Laboratories, Inc., and FGL Environmental Laboratory. Becky Goodrich, Connie Wells, and Hildy Kiefer performed quality reviews and data table preparation. John Valett provided well specifications. Monique de Vasconcelos provided essential administrative assistance. Thanks are also due to James Lane, John Scott, Karen Folks, and Larry Paukert at Site 300 for their cooperation in this effort. A draft of this report was reviewed by LLNL peers, whose suggestions for improvements are incorporated.

Appendix A

Fourth Quarter Field Observation Logs
Sewage Ponds

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 22.4
Oxygen 12
pH 10.09
Time 1300

Water Level -4 3/4"
Water Meter-Stop 4616532
Water Meter-Start 4606628

Water Added 9,904
Air Temp. 19.4
Wind Direction E TO W

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- SLIGHT

East-

Water Temp 19.9
Oxygen 12
pH 9.69
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Landrum
Inspected by

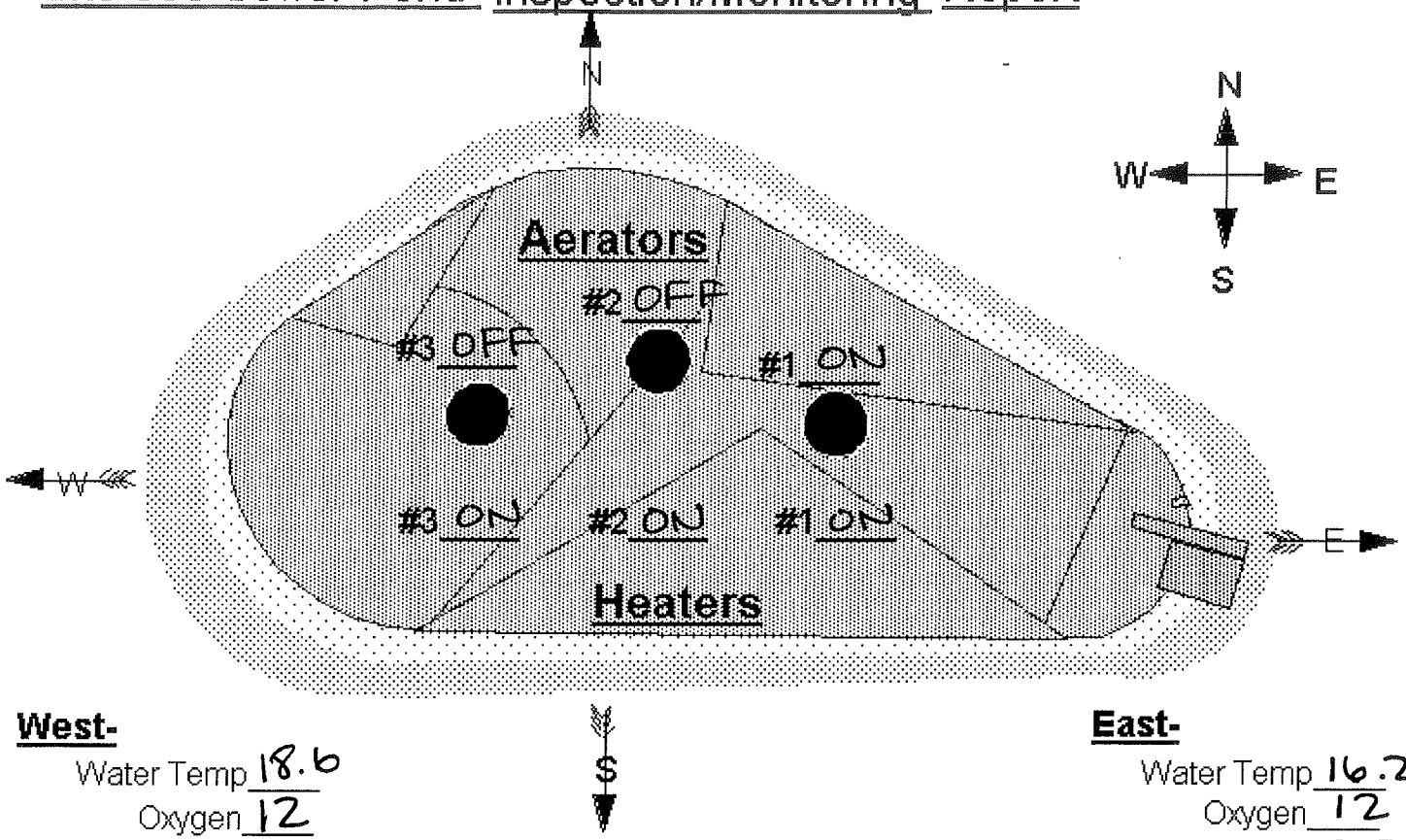
10-2-06
Date

Dave Ward
Supervisor Review

10-2-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 18.6
Oxygen 12
pH 9.89
Time 1300

Water Level 4'1/2
Water Meter-Stop 4016672
Water Meter-Start 4016532

Water Added 140
Air Temp. 18.9
Wind Direction W TO E

East-

Water Temp 16.2
Oxygen 12
pH 9.57
Time 1330

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---/ SLIGHT

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

KEVIN BROWN
Inspected by

10/5/06
Date

DAVE AMARO
Supervisor Review

10/5/06
Date

Comments

Site 300 Sewer Pond-Inspection/Monitoring Report

N

N
W E
S

Aerators

#3 OFF   #2 OFF   #1 ON

W   E

#3 ON   #2 ON   #1 ON

Heaters

S

West-

Water Temp 19.2
Oxygen 12
pH 9.65
Time 1300

Water Level -4½"
Water Meter-Stop 40166?2
Water Meter-Start 40166?2

Water Added 0
Air Temp. 28.3
Wind Direction E TO W

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---- / SLIGHT

East-

Water Temp 21.3
Oxygen 10
pH 9.58
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

[signature]
Inspected by

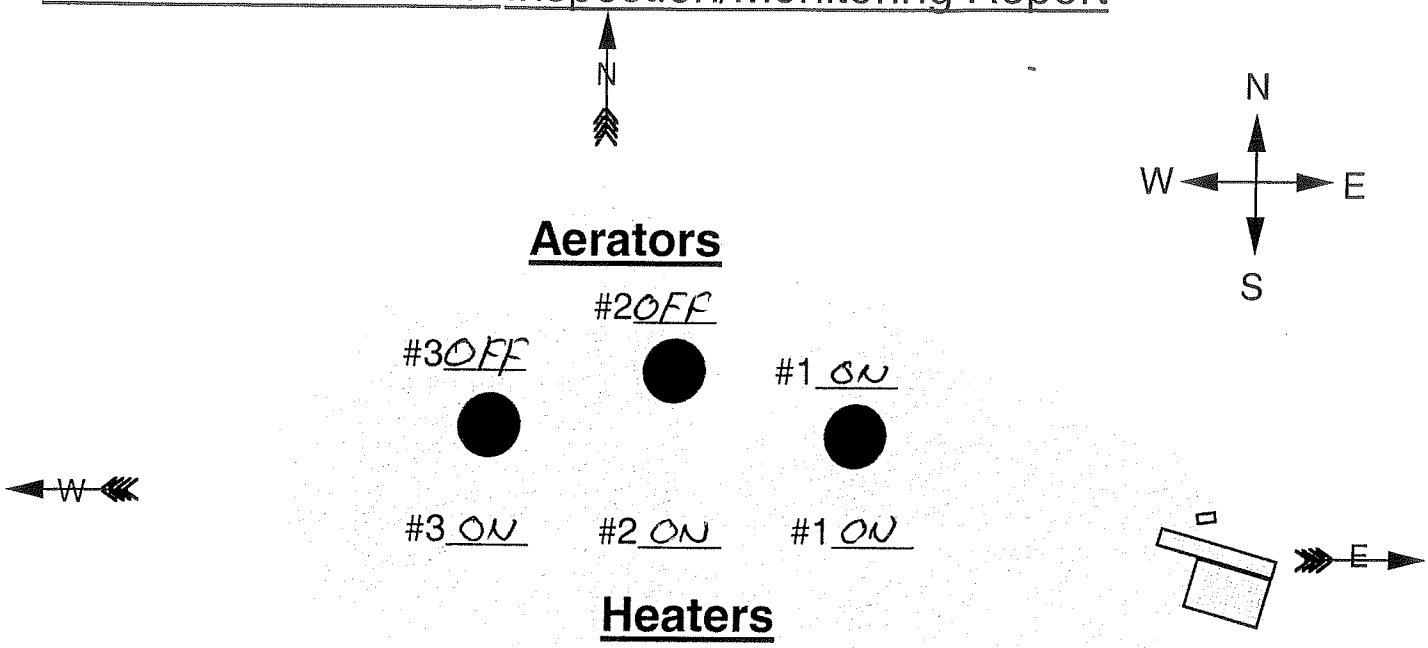
10-9-06
Date

[signature]
Supervisor Review

10-9-06
Date

Comments ____

Site 300 Sewer Pond-Inspection/Monitoring Report



West-

Water Temp 20.0c
Oxygen 12
pH 9.56
Time 1300

Water Level ~ 4 3/4"
Water Meter-Stop 4016672
Water Meter-Start 4016672

Water Added 0
Air Temp. 28.9
Wind Direction N TO S

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- SLIGHT

East-

Water Temp 18.3
Oxygen 12
pH 9.60
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Sanderson
Inspected by

10-12-06
Date

Supervisor Review

10-12-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report

N

N
W E
S

Aerators

#2 OFF

#3 OFF #1 ON

W

#3 ON #2 ON #1 ON

E

Heaters

S

West-

Water Temp 18.0
Oxygen 12
pH 9.21
Time 1300

Water Level 5"
Water Meter-Stop 401672
Water Meter-Start 401672

Water Added 0
Air Temp. 21.1
Wind Direction W TO E

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---- I SLIGHT

East-

Water Temp 19.0
Oxygen 12
pH 9.25
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Deane Sundeen
Inspected by

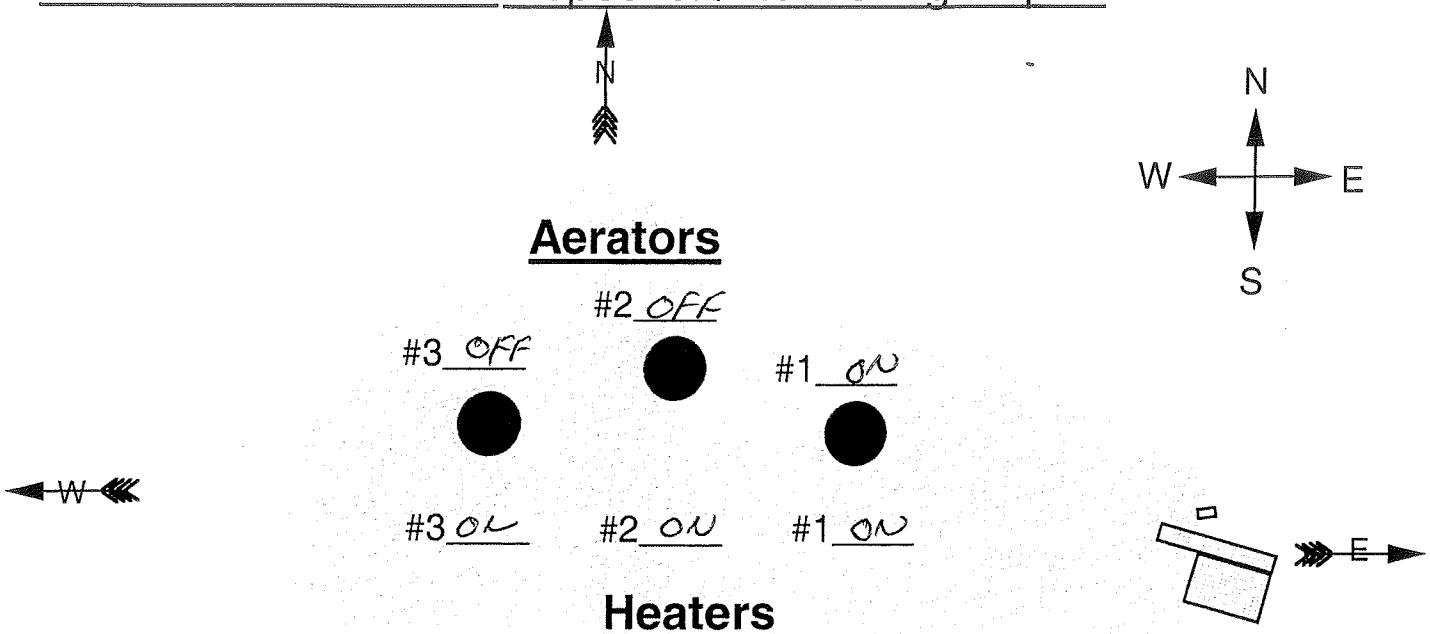
10-16-06
Date

Dave Arnold
Supervisor Review

10-16-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 21.7
Oxygen 12
pH 9.29
Time 1300

Water Level ~5¼"
Water Meter-Stop 4016672
Water Meter-Start 4016692

Water Added Ø
Air Temp. 25.0
Wind Direction E TO W

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- / SLIGHT

East-

Water Temp 17.2
Oxygen 12
pH 9.17
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Lundin
Inspected by

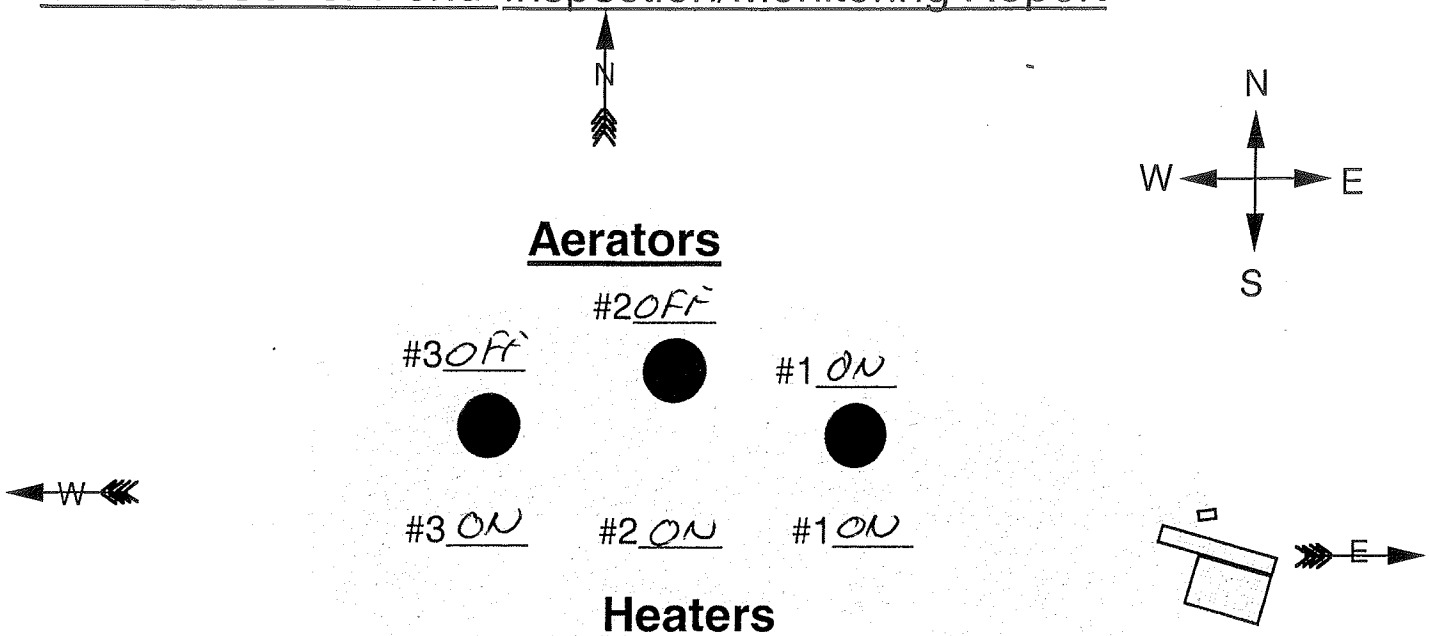
10-19-06
Date

Dale Arnold
Supervisor Review

10-19-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 20.2
Oxygen 12
pH 9.35
Time 1300

Water Level -5¼"
Water Meter-Stop 401672
Water Meter-Start 401672

Water Added 0
Air Temp. 27.8
Wind Direction E TO W

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---- SLIGHT

East-

Water Temp 17.8
Oxygen 12
pH 9.33
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

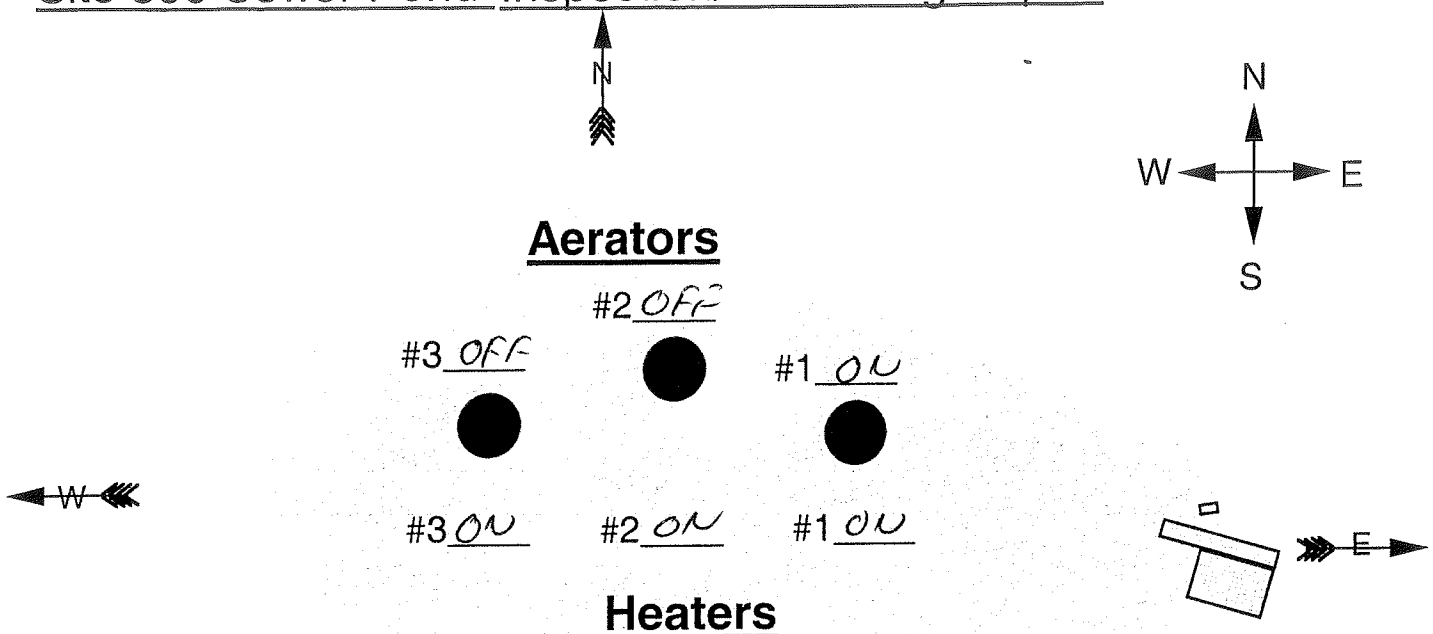
Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Inspected by [signature] 10-23-06 Date

Supervisor Review [signature] 10-23-06 Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 13.5
Oxygen 10
pH 9.36
Time 1300

Water Level - 5½"
Water Meter-Stop 4016672
Water Meter-Start 4016672

Water Added 0
Air Temp. 20.0
Wind Direction W TO S

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---- / SLIGHT

East-

Water Temp 14.3
Oxygen 12
pH 9.42
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

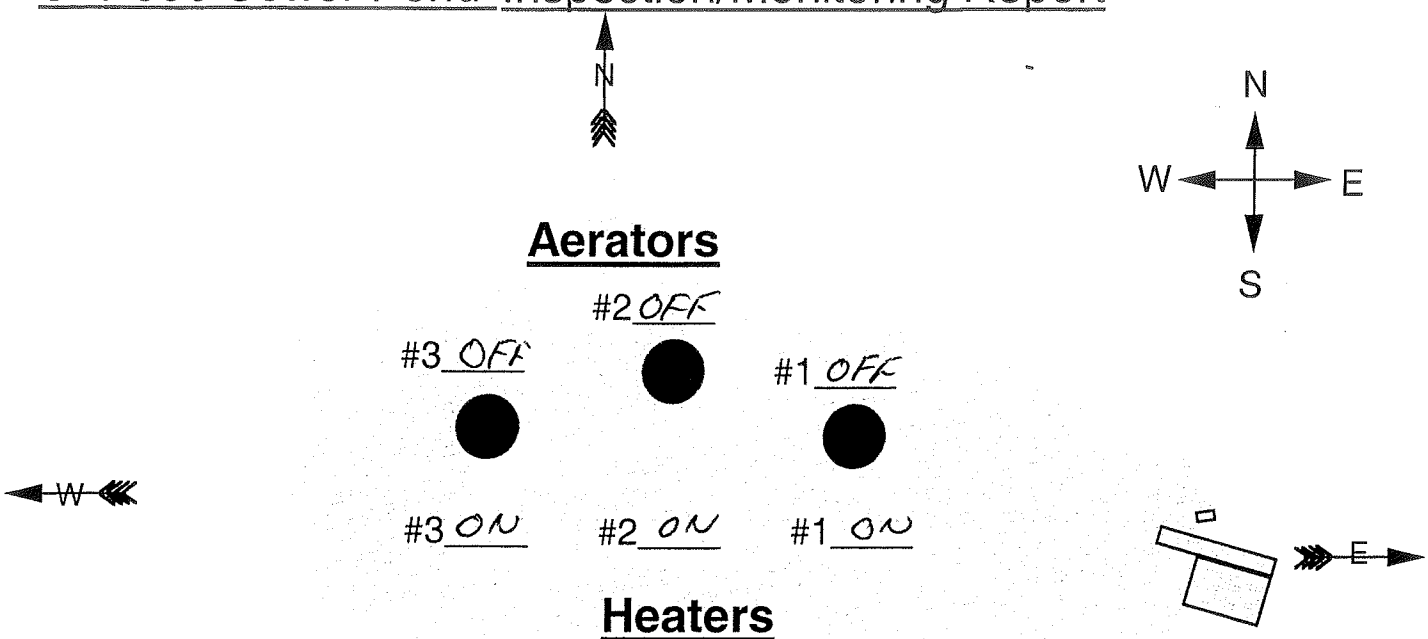
Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Inspected by — Date 10-26-06

Supervisor Review — Date 10-26-06

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 19.3
Oxygen 12
pH 9.39
Time 1300

Water Level -5¼"
Water Meter-Stop 4030547
Water Meter-Start 4016692

Water Added 13,855
Air Temp. 25.6
Wind Direction W TO E

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR----1 SLIGHT

East-

Water Temp 15.6
Oxygen 12
pH 9.43
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Landrum
Inspected by

10-30-06
Date

Dave Ansolo
Supervisor Review

10-30-06
Date

Comments

Site 300 Sewer Pond-Inspection/Monitoring Report

N

N
W E
S

Aerators

#3 ON #2 OFF #1 ON

#3 ON #2 ON #1 ON

W E

Heaters

S

West-

Water Temp 18.1
Oxygen 10
pH 8.82
Time 1300

East-

Water Temp 13.2
Oxygen 10
pH 8.94
Time 1330

Water Level ~4 3/4
Water Meter-Stop 4039894
Water Meter-Start 4030547

Water Added 9,347
Air Temp. 20.0
Wind Direction W TO E

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---- / SLIGHT

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

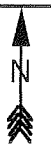
Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

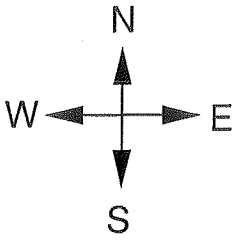
Inspected by ____ Date 11-2-06

Supervisor Review ____ Date 11-2-06.

Comments ____

Site 300 Sewer Pond- Inspection/Monitoring Report

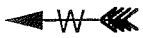




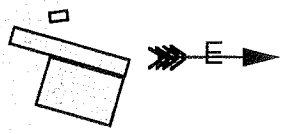
Aerators

#2 OFF

#3 ON #1 ON



#3 ON #2 ON #1 ON



Heaters

West-

Water Temp 18.8
Oxygen 12
pH 9.08
Time 1300

Water Level ~4½"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added Ø
Air Temp. 25.6
Wind Direction E TO W

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR---- SLIGHT

East-

Water Temp 18.1
Oxygen 11
pH 9.06
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Sandueen
Inspected by

11-6-06
Date

Dave Arnold
Supervisor Review

11-6-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report

N

N
W E
S

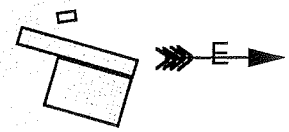
Aerators

#2 OFF

#3 ON #1 ON

W

#3 ON #2 ON #1 ON



Heaters

S

West-

Water Temp 15.5
Oxygen 12
pH 9.06
Time 1300

Water Level -4 3/4"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added OK
Air Temp. 19.4
Wind Direction W TO E

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- SLIGHT

East-

Water Temp 15.8
Oxygen 12
pH 9.02
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Devone Landrum
Inspected by

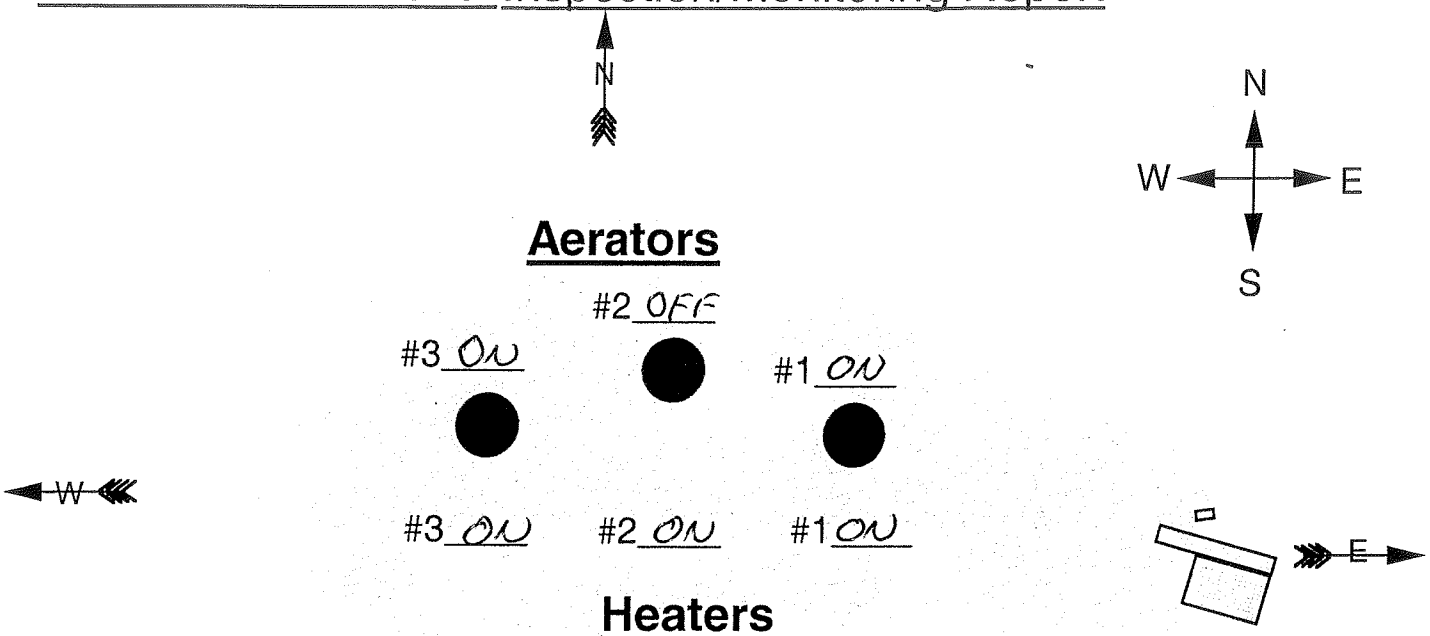
11-8-06
Date

Eric Amerio
Supervisor Review

11-8-06
Date

Comments POND APPEARS IN FINE CONDITION.

Site 300 Sewer Pond-Inspection/Monitoring Report



West-

Water Temp 13.4

Oxygen 12

pH 9.13

Time 1300

Water Level - 4½ "

Water Meter-Stop 4039894

Water Meter-Start 4039894

Water Added 0

Air Temp. 17.8

Wind Direction E TO W

S

COLOR----

Green ✓

Green Brown____

Brown Green____

Brown____

ODOR----/ SLIGHT

East-

Water Temp 13.6

Oxygen 11

pH 9.14

Time 1330

Common Bacterium-Per Drop____

Activated Sludge____

Glass Tube Test ✓

Erosion SOME

Animal Burrows SOME

Weed Control SOME

Percolation Pond

Water Level- DRY

Erosion SOME

Animal Burrows SOME

Weed Control SOME

Diane Lindum
Inspected by

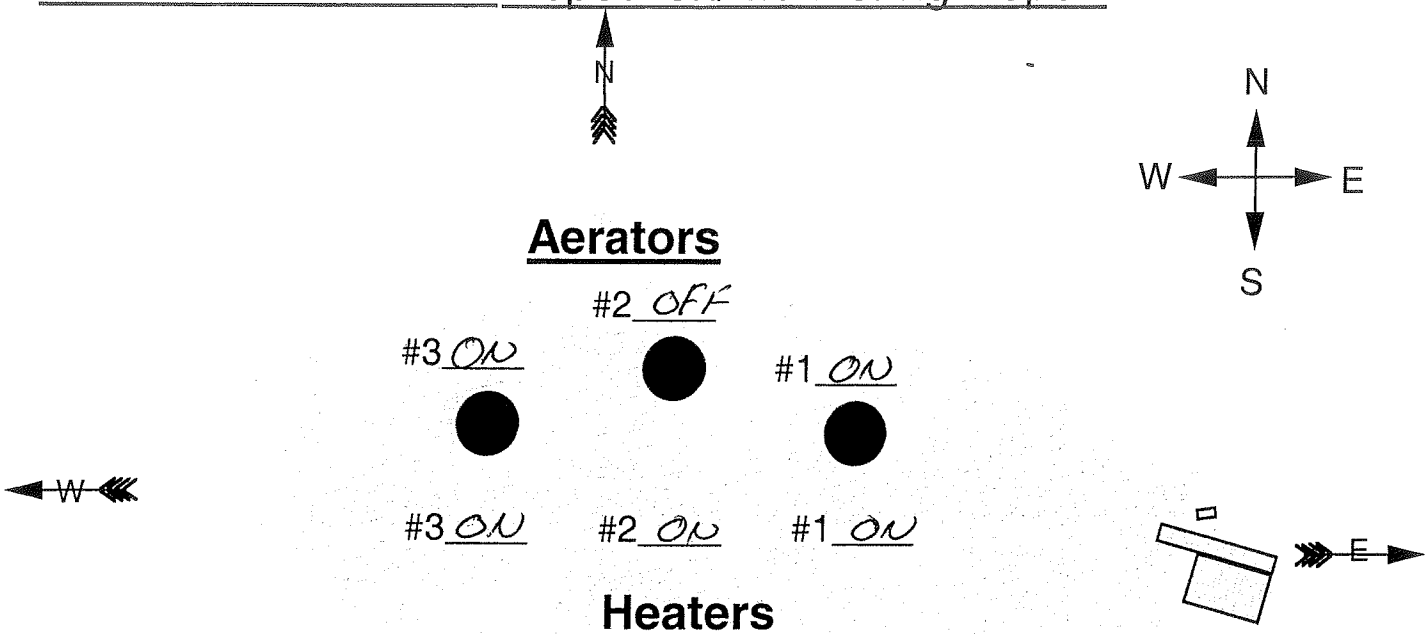
11-13-06
Date

Dave Amrhein
Supervisor Review

11-13-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report



West-

Water Temp 16.2
Oxygen 12
pH 9.15
Time 1300

Water Level -4"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added 0
Air Temp. 17.2
Wind Direction ESE TO W

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- SLIGHT

East-

Water Temp 14.6
Oxygen 12
pH 9.19
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Sanderson
Inspected by

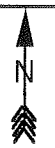
11-16-06
Date

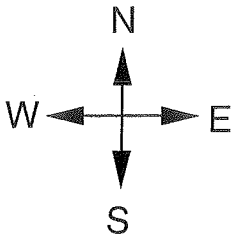
Supervisor Review

11-16-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report

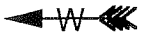




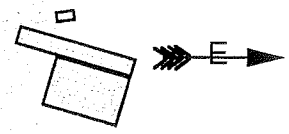
Aerators

#2 OFF

#3 ON #1 ON



#3 ON #2 ON #1 ON



Heaters

West-

Water Temp 14.9
Oxygen 12
pH 9.23
Time 1300

Water Level -3½"
Water Meter-Stop 4039854
Water Meter-Start 4039854

Water Added 0
Air Temp. 15.6
Wind Direction E TO W

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- SLIGHT

East-

Water Temp 13.7
Oxygen 12
pH 9.23
Time 1336

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
Animal Burrows SOME
Weed Control SOME

Duane Lundum
Inspected by

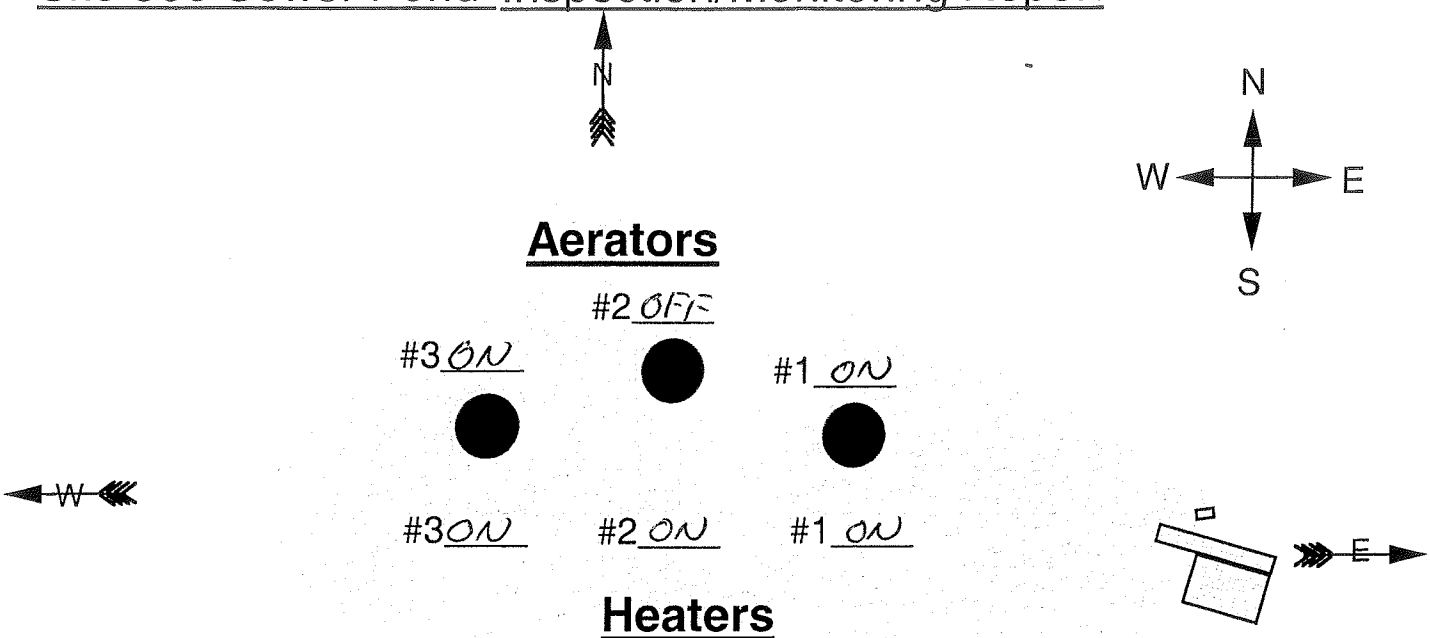
11-20-06
Date

Dave Arnold.
Supervisor Review

11-20-06.
Date

Comments

Site 300 Sewer Pond-Inspection/Monitoring Report



West-

Water Temp 10.2

Oxygen 12

pH 8.96

Time 1300

Water Level -3"

Water Meter-Stop 4039894

Water Meter-Start 4039894

Water Added 0

Air Temp. 11.1

Wind Direction W TO E

COLOR----

Green ✓

Green Brown____

Brown Green____

Brown____

ODOR----1 SLIGHT

East-

Water Temp 10.7

Oxygen 10

pH 9.02

Time 1330

Common Bacterium-Per Drop____

Activated Sludge____

Glass Tube Test ✓

Erosion SOME

Animal Burrows SOME

Weed Control SOME

Percolation Pond

Water Level- DRY

Erosion SOME

Animal Burrows SOME

Weed Control SOME

Divone Jenkins
Inspected by

11-27-06
Date

Supervisor Review

11-29-06
Date

Comments

Site 300 Sewer Pond-Inspection/Monitoring Report

N

N
W E
S

Aerators

#2 OFF

#3 ON

#1 ON

W

#3 ON #2 ON #1 ON

E

Heaters

S

West-

Water Temp 11.1

Oxygen 12

pH 8.94

Time 1300

Water Level -3"

Water Meter-Stop 4039894

Water Meter-Start 4039894

Water Added Ø

Air Temp. 13.3

Wind Direction E TO W

COLOR----

Green ✓

Green Brown____

Brown Green____

Brown____

ODOR----/ SLIGHT

East-

Water Temp 7.8

Oxygen 10

pH 8.98

Time 1330

Common Bacterium-Per Drop____

Activated Sludge____

Glass Tube Test ✓

Erosion SOME

Animal Burrows SOME

Weed Control SOME

Percolation Pond

Water Level- DRY

Erosion SOME

nimal Burrows SOME

Weed Control SOME

[signature]
Inspected by

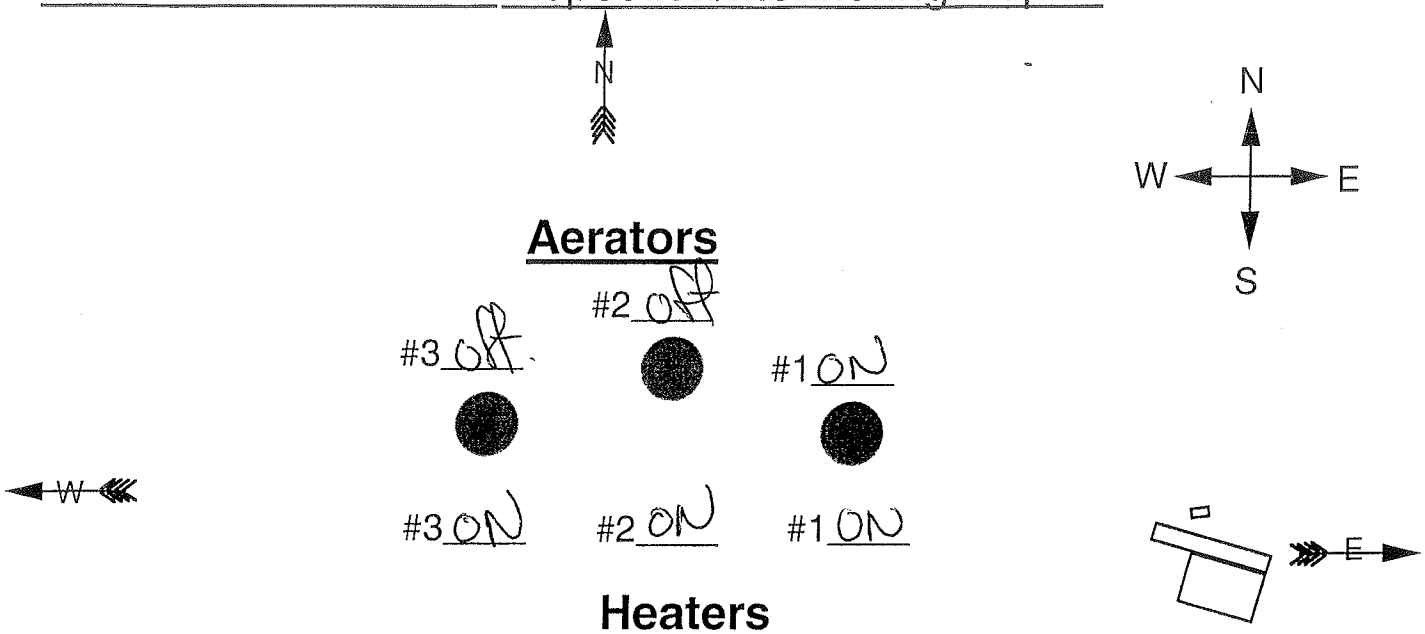
11-30-06
Date

[signature]
Supervisor Review

11-30-06
Date

Comments____

Site 300 Sewer Pond-Inspection/Monitoring Report



West-

Water Temp 11.0
Oxygen 12
pH 8.88
Time 1300

Water Level 3'4
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added Ø
Air Temp. 13.3
Wind Direction E to W.

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR----/ slight

East-

Water Temp 7.6
Oxygen 10
pH 8.27
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion Some
Animal Burrows Some
Weed Control Some

Percolation Pond

Water Level- Dry
Erosion Some
nimal Burrows Some
Weed Control Some.

Dave Arnold. — Inspected by — 12-4-06 — Date

Dave Arnold. — Supervisor Review — 12-4-06. — Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report

N

N

W E

S

Aerators

#2 OFF

#3 ON

#1 ON

← W

#3 ON #2 ON #1 ON

E →

Heaters

S

West-

Water Temp 10.2

Oxygen 12

pH 9.00

Time 1300

Water Level -2¼"

Water Meter-Stop 4039894

Water Meter-Start 4039894

Water Added 0

Air Temp. 7.8

Wind Direction E TOW

COLOR----

Green ✓

Green Brown____

Brown Green____

Brown____

ODOR----/ SLIGHT

East-

Water Temp 9.0

Oxygen 12

pH 8.49

Time 1330

Common Bacterium-Per Drop____

Activated Sludge____

Glass Tube Test ✓

Erosion SOME

Animal Burrows SOME

Weed Control SOME

Percolation Pond

Water Level- DRY

Erosion SOME

nimal Burrows SOME

Weed Control SOME

[signature] 12-11-06

Inspected by Date

[signature] 12-11-06.

Supervisor Review Date

Comments ______________________________

Site 300 Sewer Pond- Inspection/Monitoring Report

N

N
W E
S

Aerators

#2 OFF

#3 ON #1 ON

← W E →

#3 ON #2 ON #1 ON

Heaters

S

West-

Water Temp 13.1
Oxygen 12
pH 9.00
Time 1300

Water Level -1½"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added ∅
Air Temp. 17.2
Wind Direction W TO E

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- / SLIGHT

East-

Water Temp 14.0
Oxygen 12
pH 9.00
Time 1330

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
nimal Burrows SOME
Weed Control SOME

[signature]
Inspected by

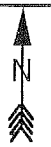
12-14-06
Date

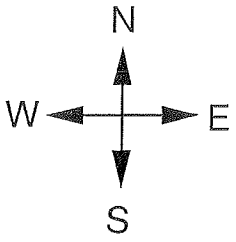
[signature]
Supervisor Review

12-14-06
Date

Comments____________________

Site 300 Sewer Pond-Inspection/Monitoring Report

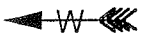




Aerators

#2 OFF

#3 ON #1 ON



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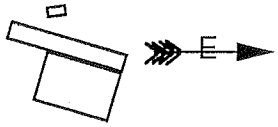


Heaters

West-

Water Temp 9.7
Oxygen 12
pH 9.02
Time 1300

Water Level -1¼"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added 0
Air Temp. 11.1
Wind Direction W TO E

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR----I SLIGHT

East-

Water Temp 9.4
Oxygen 12
pH 9.08
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
nimal Burrows SOME
Weed Control SOME

Duane Landrum
Inspected by

12-18-06
Date

Dave Moore
Supervisor Review

12-18-06
Date

Comments

Site 300 Sewer Pond- Inspection/Monitoring Report

N

N
W E
S

Aerators

#2 OFF

#3 ON #1 OFF

W

#3 ON #2 ON #1 ON

E

Heaters

S

West-

Water Temp 5.6
Oxygen 10
pH 9.06
Time 0800

East-

Water Temp 5.8
Oxygen 11
pH 9.02
Time 0830

Water Level ~1¼"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added Ø
Air Temp. 8.3
Wind Direction W TO E

COLOR----

Green ✓
Green Brown____
Brown Green____
Brown____

ODOR---- / SLIGHT

Common Bacterium-Per Drop____
Activated Sludge____
Glass Tube Test ✓

Erosion some
Animal Burrows some
Weed Control some

Percolation Pond

Water Level- DRY
Erosion some
nimal Burrows some
Weed Control some

Duane Jordan
Inspected by

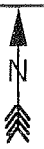
12-21-06
Date

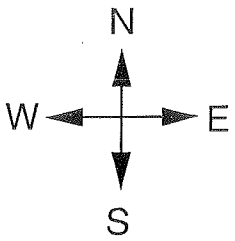
[signature]
Supervisor Review

12-21-06
Date

Comments ______________________________

Site 300 Sewer Pond- Inspection/Monitoring Report



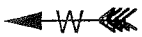


Aerators

#2 OFF

#3 ON

#1 ON



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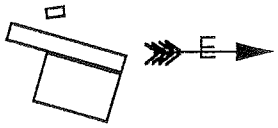

Heaters

West-

Water Temp 8.9
Oxygen 12
pH 9.12
Time 1300

Water Level -1"
Water Meter-Stop 4039894
Water Meter-Start 4039894

Water Added 0
Air Temp. 11.1
Wind Direction W TO E

COLOR----

Green ✓
Green Brown ____
Brown Green ____
Brown ____

ODOR----/ NONE

East-

Water Temp 9.3
Oxygen 12
pH 9.07
Time 1330

Common Bacterium-Per Drop ____
Activated Sludge ____
Glass Tube Test ✓

Erosion SOME
Animal Burrows SOME
Weed Control SOME

Percolation Pond

Water Level- DRY
Erosion SOME
nimal Burrows SOME
Weed Control SOME

I.C. Brown
Inspected by

12/28/06
Date

Supervisor Review

12/28/06
Date

Comments

Appendix B

Specifications of Sewage Ponds Monitor Wells

Appendix B. Summary of sewage pond well specifications.

Well	HSU	Easting	Northing	Ground Surface Elevation	Measuring Point Elevation	Screen Top Elevation	Screen Bottom Elevation	Bentonite Top Elevation	Filter pack Top Elevation	Well Bottom Elevation
W-7E	$Tnbs_1$	1,711,708	414,581	506.70	509.28	447.90	428.70	453.70	451.70	428.70
W-7ES	Qal-$Tnbs_1$	1,711,719	414,586	506.41	509.71	491.41	481.41	496.41	495.41	479.61
W-7PS	Qal-$Tnbs_1$	1,711,773	414,782	506.10	508.78	489.60	486.60	494.10	492.10	486.60
W-35A-04	Qal-$Tnbs_1$	1,712,036	414,642	504.07	503.98	485.07	475.07	494.87	486.27	475.07
W-26R-01	Qal-$Tnbs_1$	1,712,267	415,036	506.74	509.71	486.94	481.94	494.24	490.74	476.94
W-26R-11	Qal-$Tnbs_1$	1,712,198	414,961	504.07	503.98	485.07	475.07	494.87	486.27	475.07
W-26R-05	Qal-$Tnbs_1$	1,712,339	415,070	504.07	503.98	485.07	475.07	494.87	486.27	475.07
W-25N-20	Qal-$Tnbs_1$	1,712,371	414,923	504.07	503.98	485.07	475.07	494.87	486.27	475.07
W-7DS	Qal-$Tnbs_1$	1,712,206	414,880	504.07	503.98	485.07	475.07	494.87	486.27	475.07

Note: All measurements are made in feet; elevations are in feet above mean sea level.

HSU = Hydrostratigraphic unit.

Appendix C

Fourth Quarter Field Logs
Wastewater Monitoring
Sewage Ponds

FIELD TRACKING FORM

INFLUENT TO SITE 300 SEWAGE POND

Lab	COC #
Lab	FGL
CoC #	37870
Ship It #	89810

DATE: 11/15/06 TIME: 13 45

Special Instructions: Quarterly Sampling (in 2nd Month)
Samples should be taken after 1 p.m. during higher flow.
Print collection time on sample bottles.
BOD Hold Time 48hr. Conductivity/pH Hold Time 24hr.

pH meter calibrated ✓
Conductivity meter calibrated ✓
DO meter calibrated ✓

Location	Field Measurements: pH	COND	DO (PPM)	Temp (°C)	Comments	Initials	Samples for Lab Analysis
3-ISWP-01-OW (Influent to Sewage Pond)	~~8.28~~ 8.28	2.17 mS	2.41	21.4		KS CF	**Analytical Codes:** **E120.1A & E150.1A** (Conductivity/pH) (1 X 125-mL poly) ✓
3-WSWP-01-OW *duplicate of* 3-ISWP-01-OW	~~8.72~~	6.34	12.04	~~14.9~~ KS		↓	**SM5210B-A** (BOD) (1 X 1000-mL poly) ✓

4Q2006 Duplicate **SM5210B-A**
2Q2007 Duplicate **E120.1A & E150.1A**
4Q2007 Duplicate **SM5210B-A**

☑ Copy to Analyst, Richard Brown

☑ Copy of CoC given to TRR

Revised 11/8/06

FIELD TRACKING FORM

EAST END OF SITE 300 SEWAGE POND

Lab	FGL
CoC #	37876
Ship It #	89810

DATE: 11/5/06 TIME: 1405

Special Instructions: Quarterly Sampling (in 2nd Month)
Samples must be taken after 1 p.m.
Print collection time on sample bottles.
DO/conductivity/pH hold time 24 hr.

pH meter calibrated ✓
Conductivity meter calibrated ✓
DO meter calibrated ✓

Location	Field Measurements					Comments	Initials	Samples for Lab Analysis
	pH	COND	Depth	DO (PPM)	Temp (°C)			
3-ESWP-01-OW (East end of Sewage Pond)	8.72	6.34 MS	10' ~~12.04~~	12.04 ~~14.9~~ KS	14.9		KS	**Analytical Codes:** **E360.1** (DO) (1X500-mL glass, NO head space) ✓
								E120.1A & E150.1A (Conductivity/pH) (1X125-mL poly) ✓

1Q2007 Duplicate **E360.1**
3Q2007 Duplicate **E120.1A & E150.1A**
1Q2008 Duplicate **E360.1**

✓ Copy to Analyst, Richard Brown

✓ Copy of CoC given to TRR

Revised 11/8/06

Appendix D

Annual Summary Plots and Tables of Sewage Evaporation and Percolation Ponds Wastewater Monitoring Data

Appendix D

This appendix contains graphical and tabular summaries of the sewage evaporation and percolation ponds wastewater monitoring data. The monitoring requirements of WDR 96-248 began in the fourth quarter of 1996. Monitoring data at the sewage ponds from samples collected and analyzed on a routine basis since that time are plotted; the tabular summary includes only data from samples collected in 2006.

Wastewater influent monitoring at location ISWP consists of pH, electrical conductivity (EC), and biochemical oxygen demand (BOD). Routine wastewater monitoring at location ESWP consists of pH, EC, and dissolved oxygen (DO). A continuous discharge from the sewage evaporation pond into the percolation pond at location DSWP began in January and continued through the first quarter of 2006. A sample of the discharge was collected on January 4, 2006, and analyzed for pH, EC, BOD, nitrogen-bearing nutrients including nitrate, and fecal and total coliform bacteria.

Each two-dimensional graph plots concentration on the vertical axis versus time (years divided into four quarterly sampling periods) on the horizontal axis. Units of measure are given on the vertical axis label and in the header at the top of each page. Values above the analytical reporting limit for each analyte are plotted as solid diamonds, and values below the analytical reporting limit are plotted as open inverted triangles. Data determined not to be valid are not plotted.

Tabular summaries of the observations are contained in **Tables D-1** to **D-4**, starting on page D-17.

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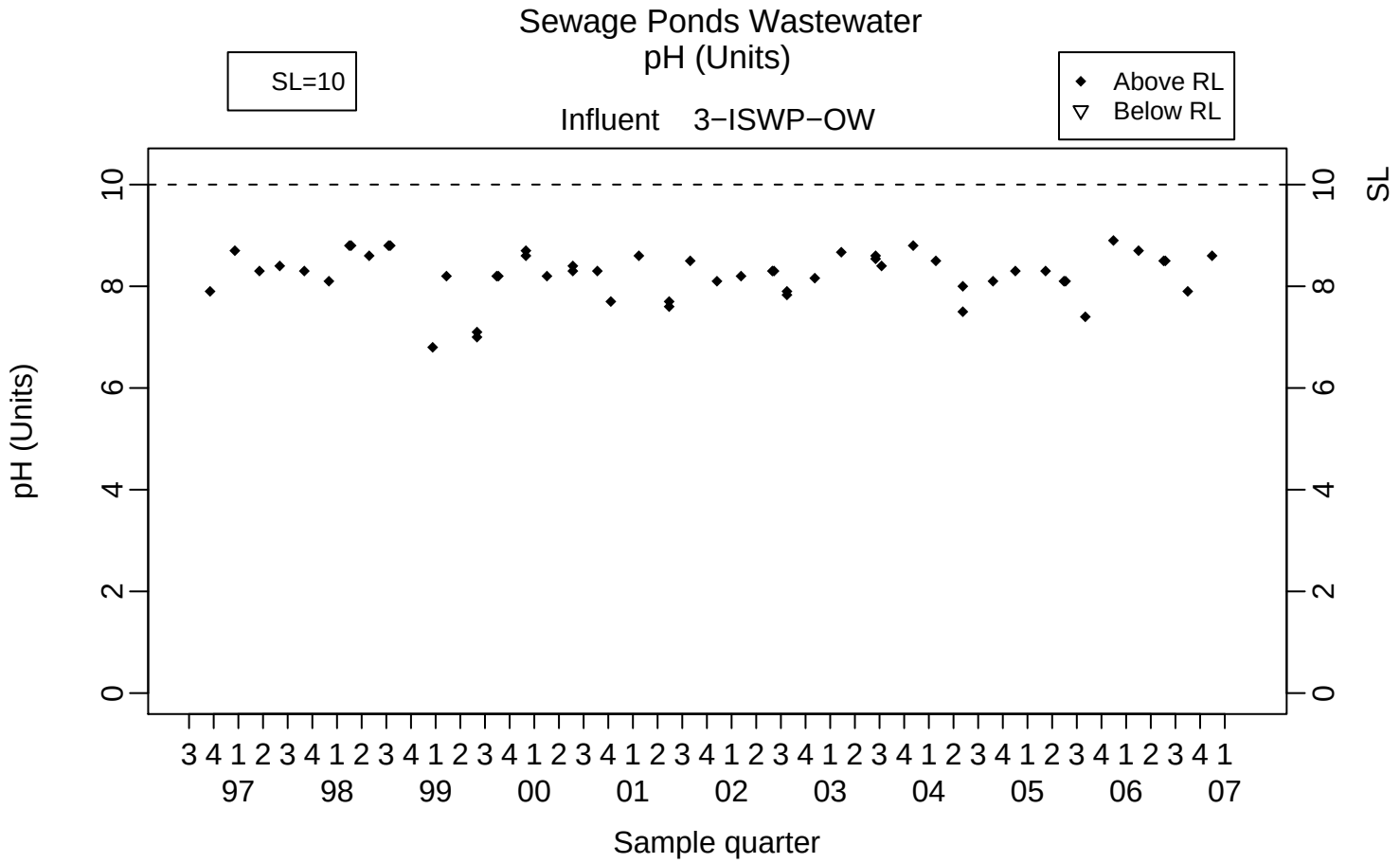
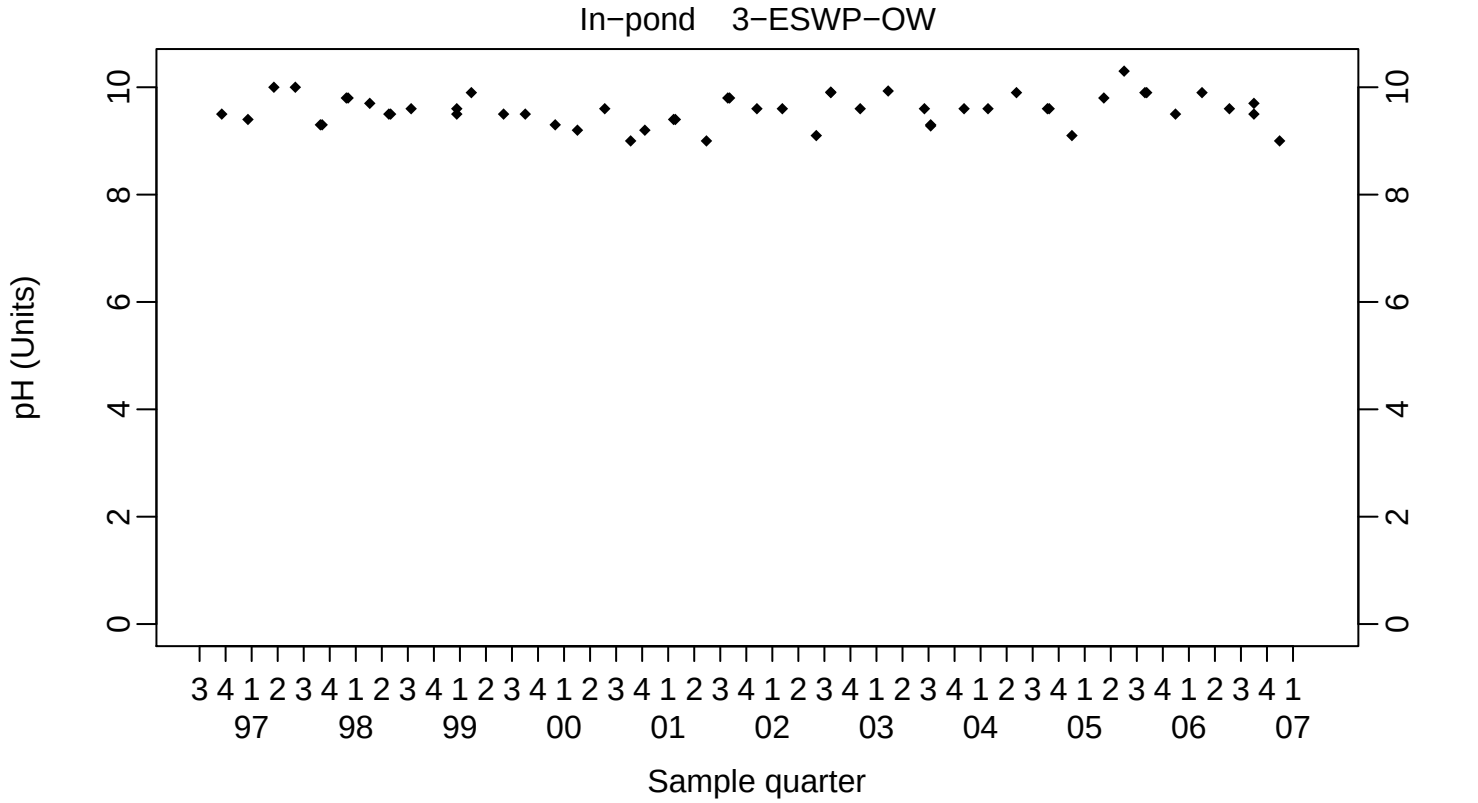
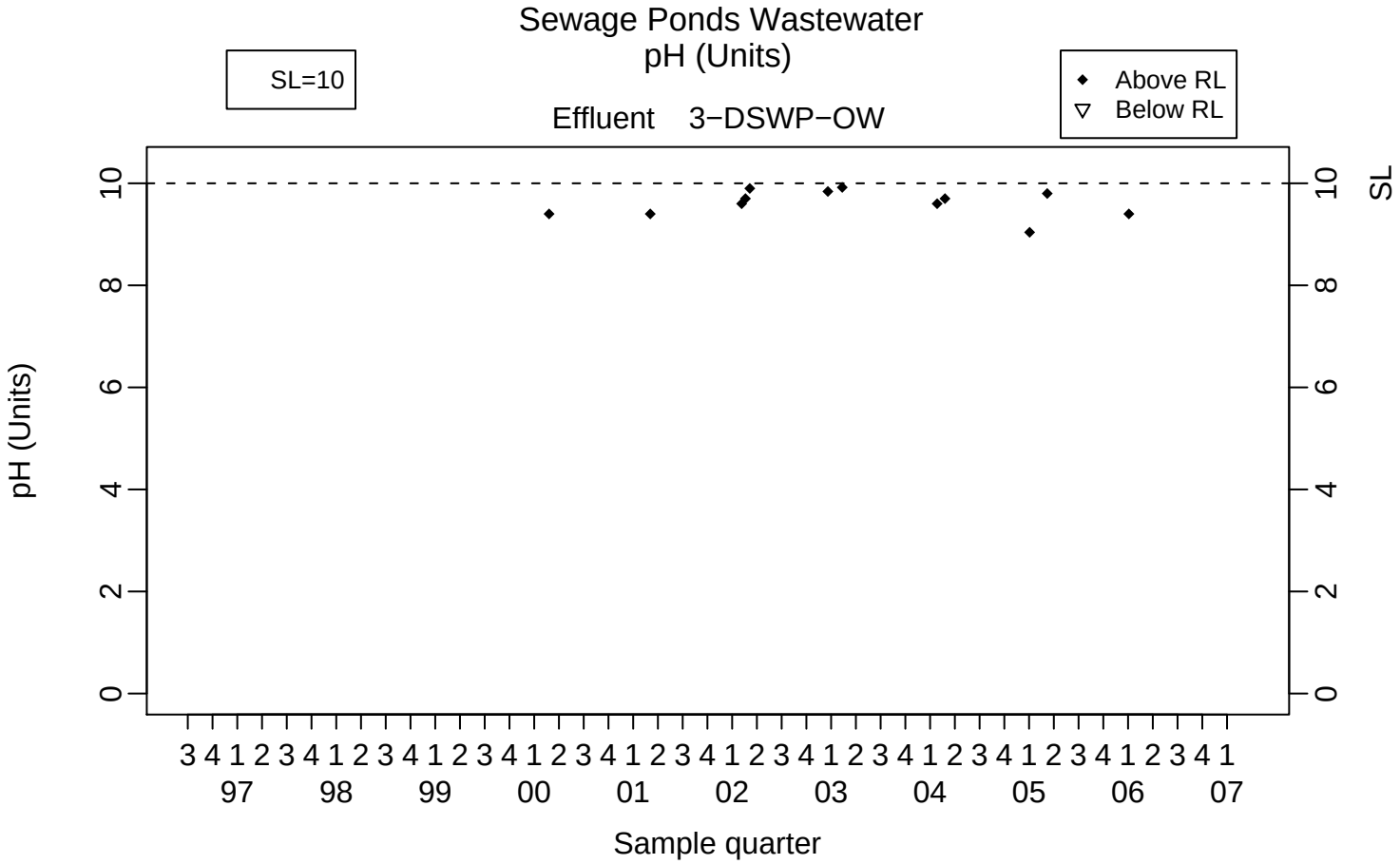
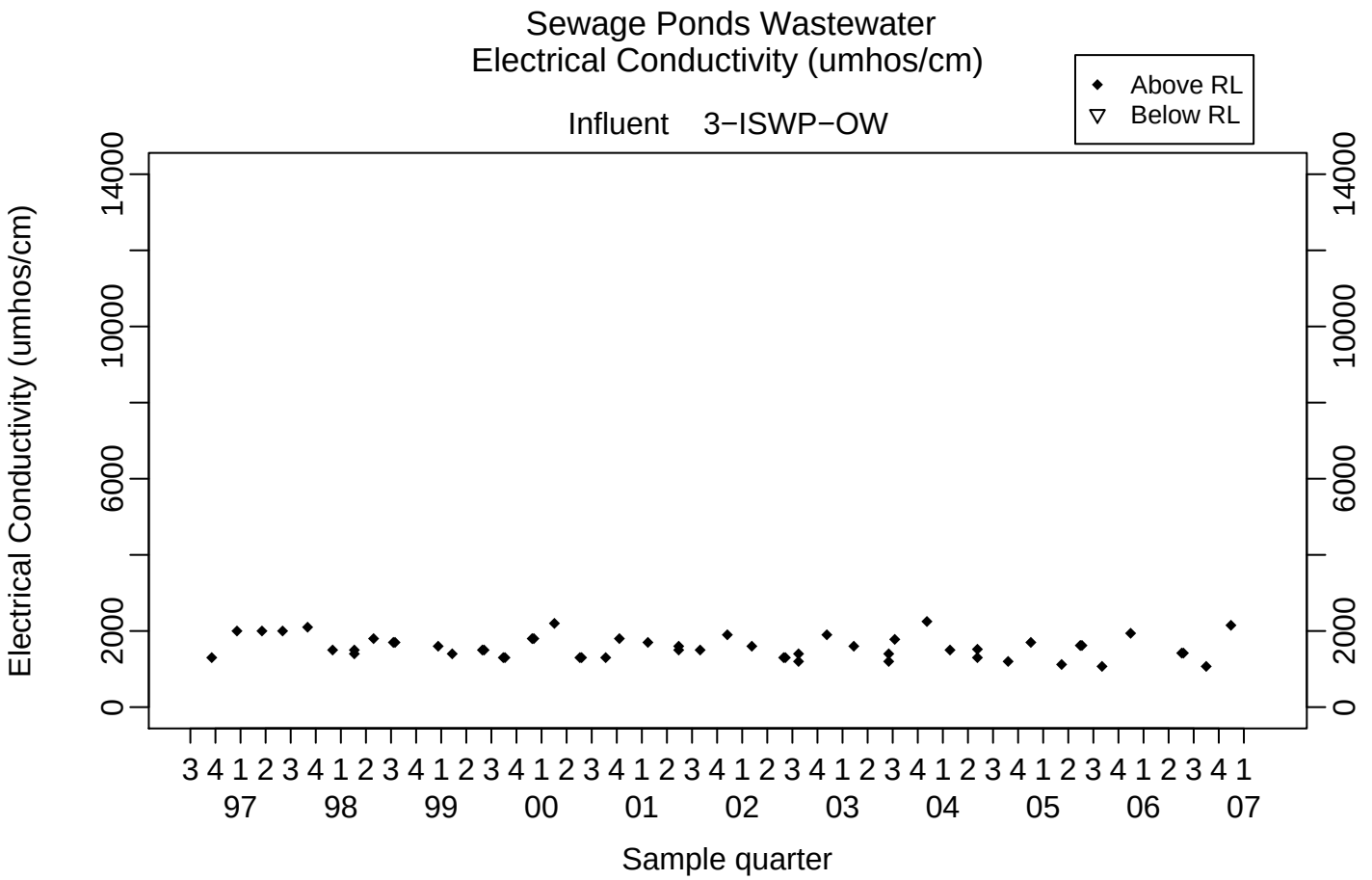
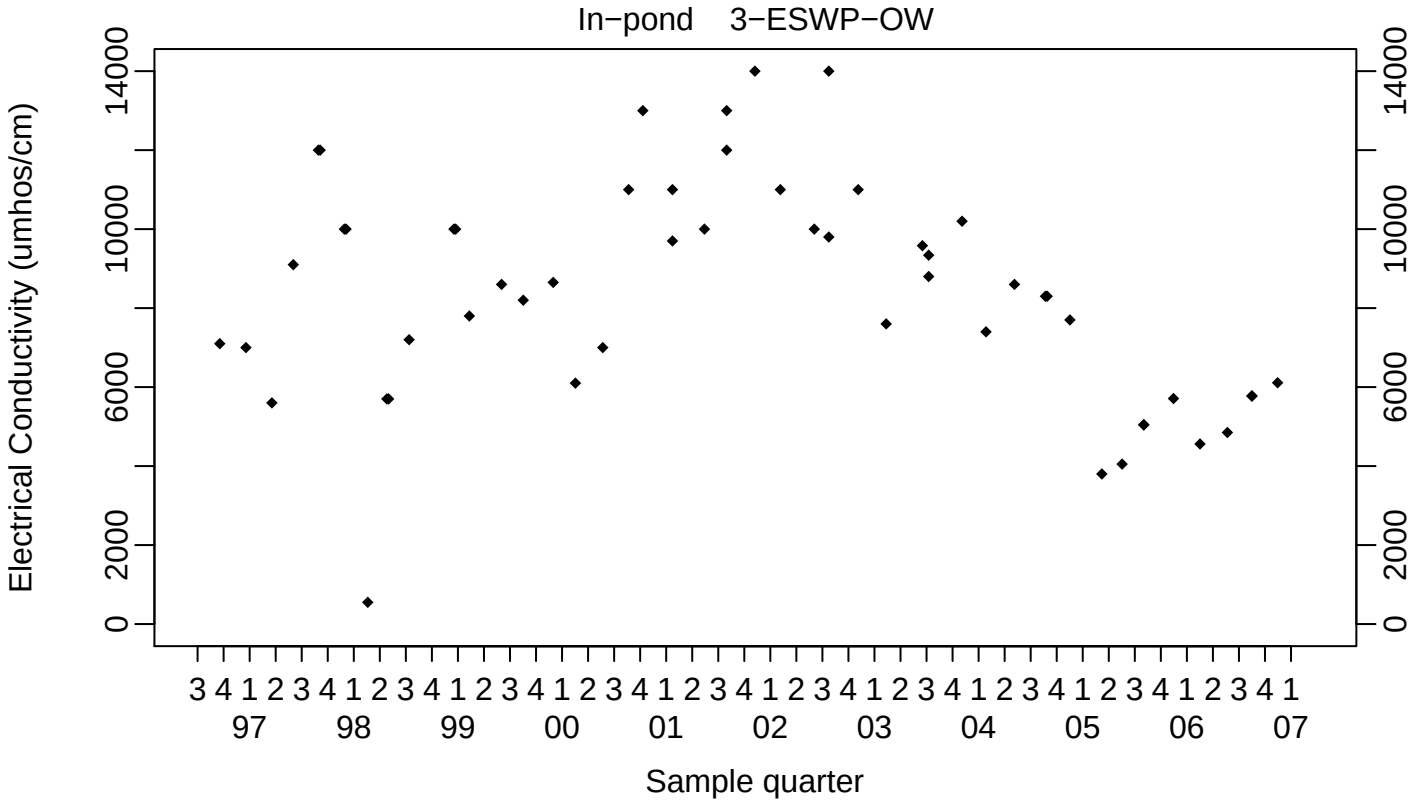
Annual Plots of
Sewage Evaporation and Percolation Ponds
Wastewater Monitoring Data

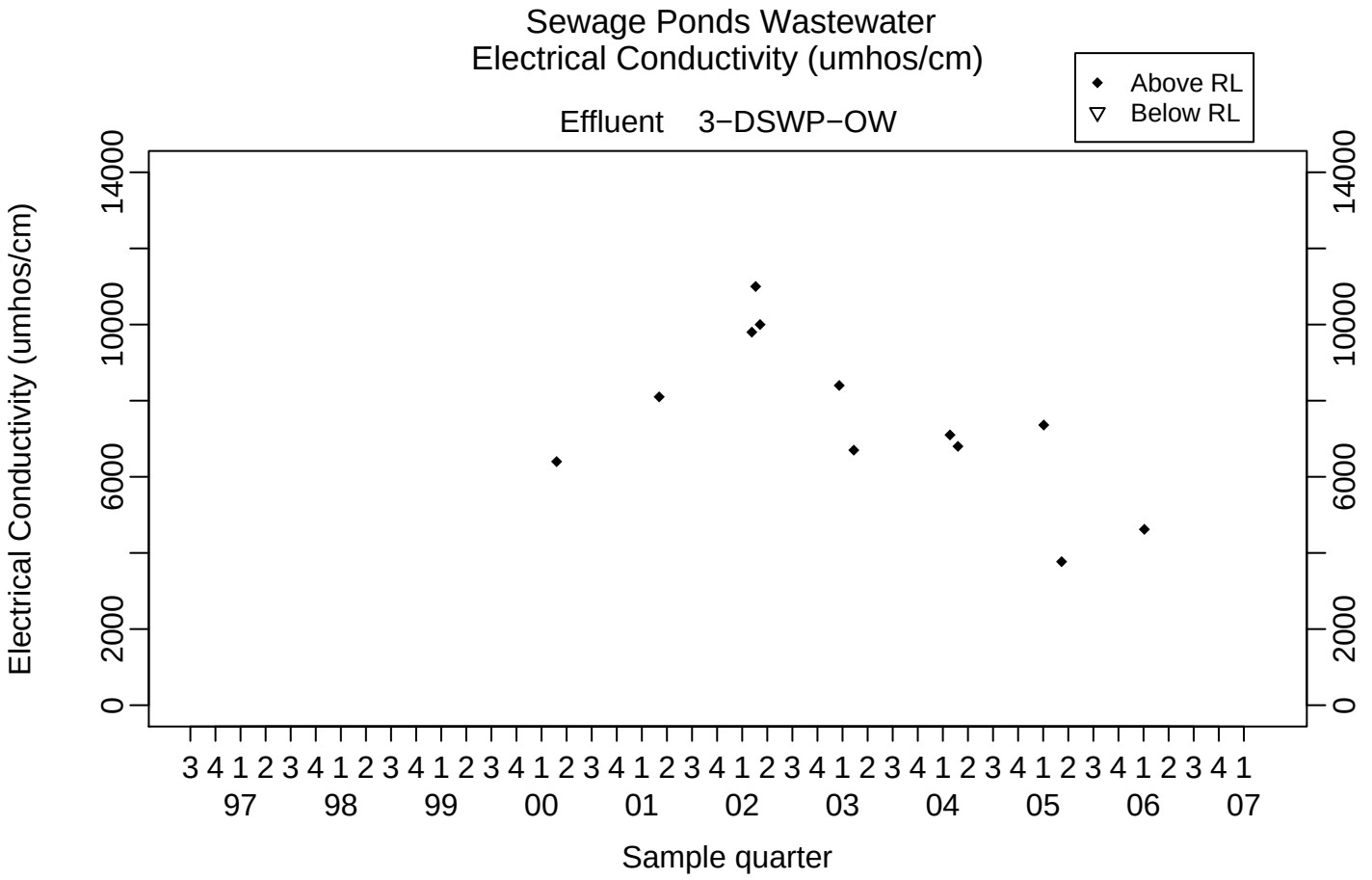

Sewage Ponds Wastewater
pH (Units)
SL=10
Above RL
Below RL
Influent 3−ISWP−OW
pH (Units)
SL
0
2
4
6
8
10
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

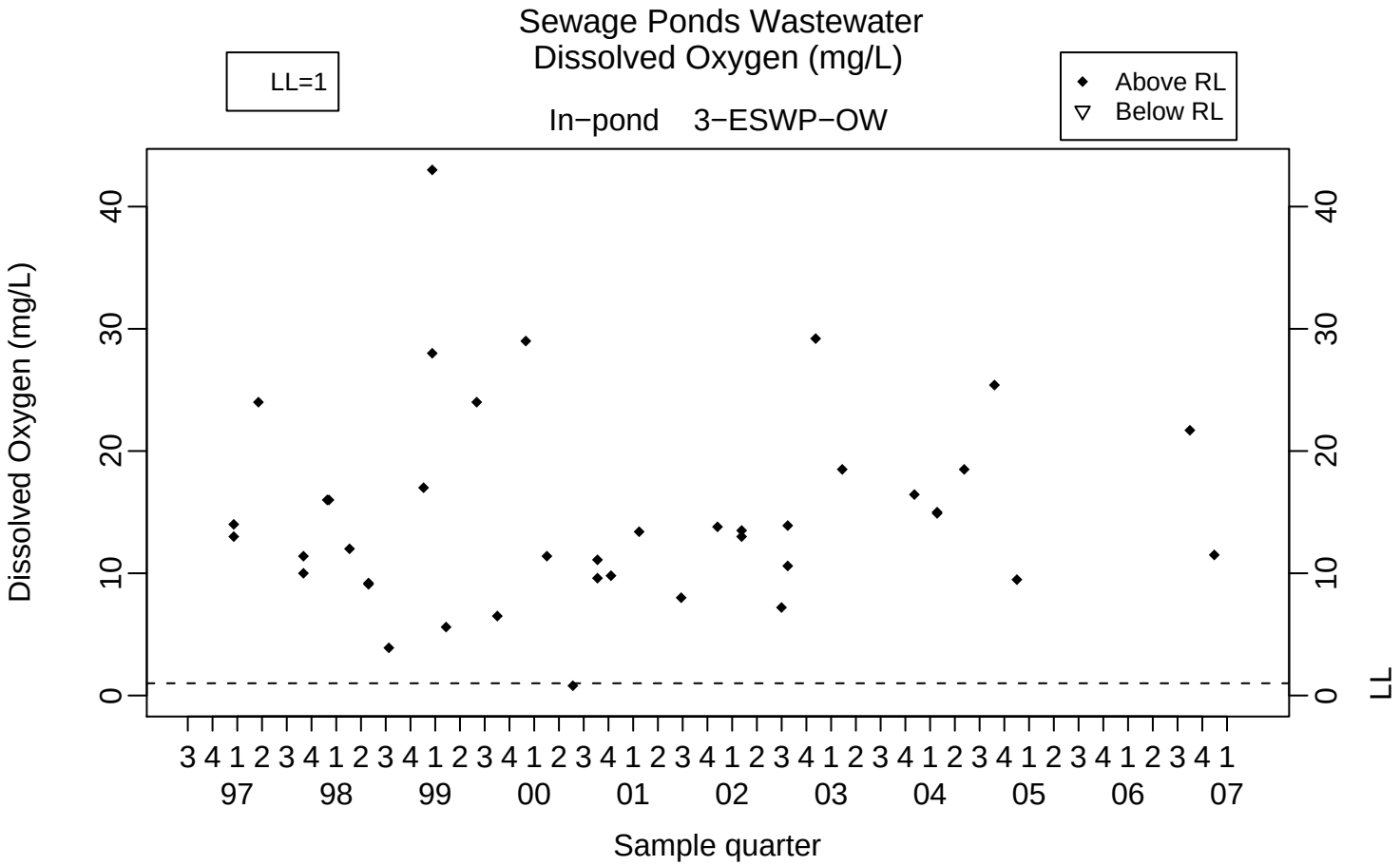

In−pond 3−ESWP−OW
pH (Units)
0
2
4
6
8
10
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

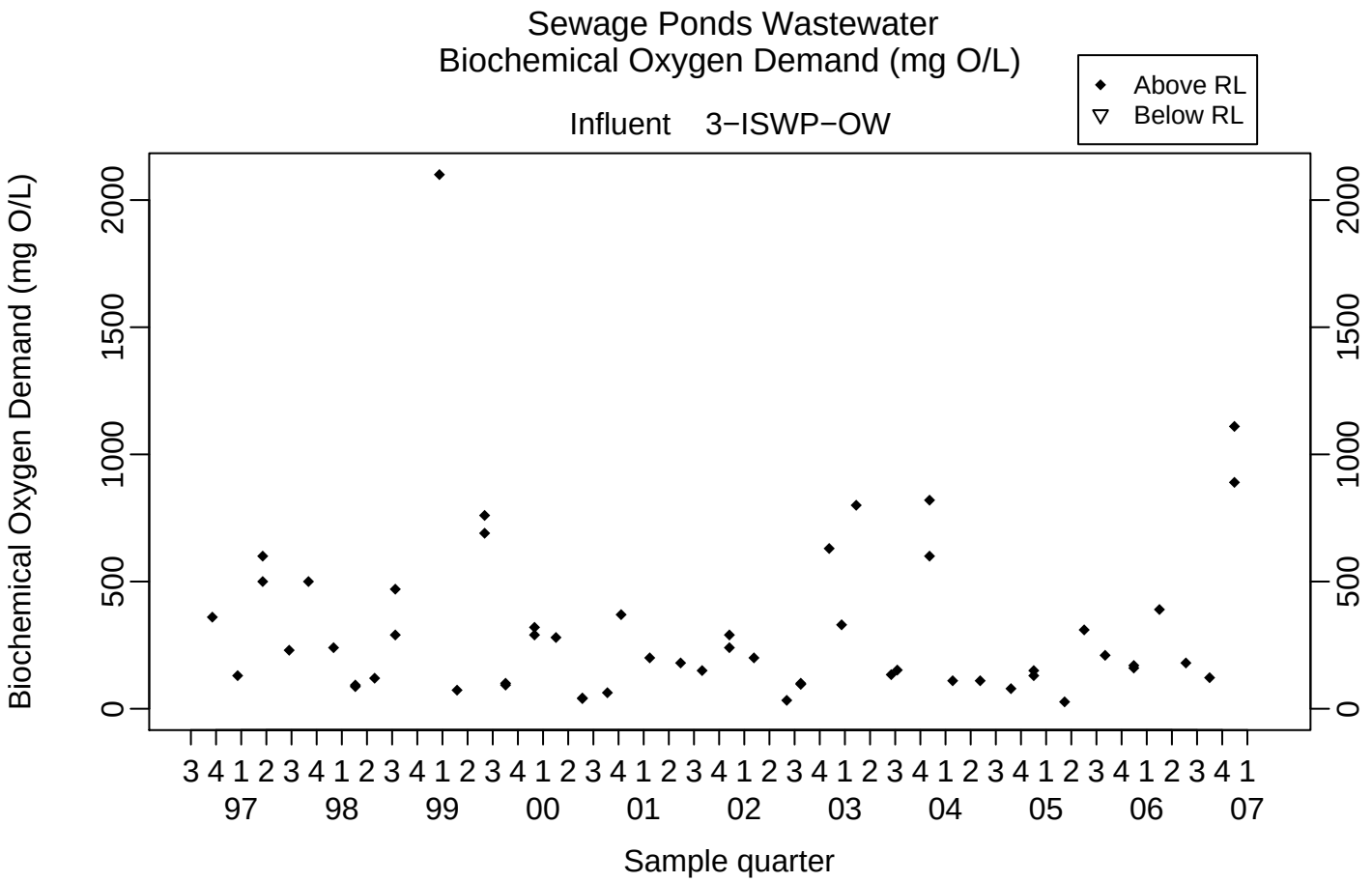

Sewage Ponds Wastewater
pH (Units)
Effluent 3−DSWP−OW
SL=10
Above RL
Below RL
pH (Units)
SL
0
2
4
6
8
10
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

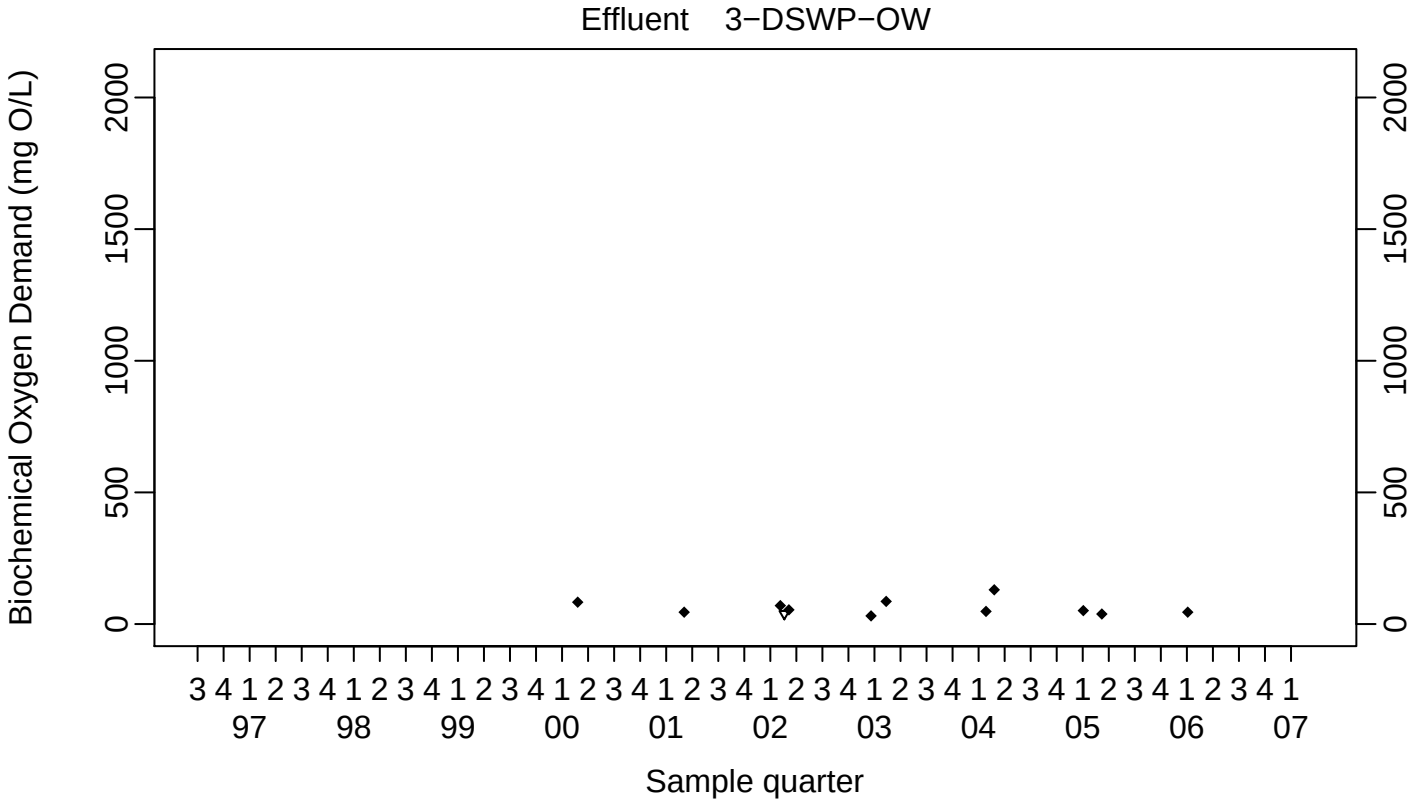

Sewage Ponds Wastewater
Electrical Conductivity (umhos/cm)
Above RL
Below RL
Influent 3−ISWP−OW
Electrical Conductivity (umhos/cm)
0
2000
6000
10000
14000
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

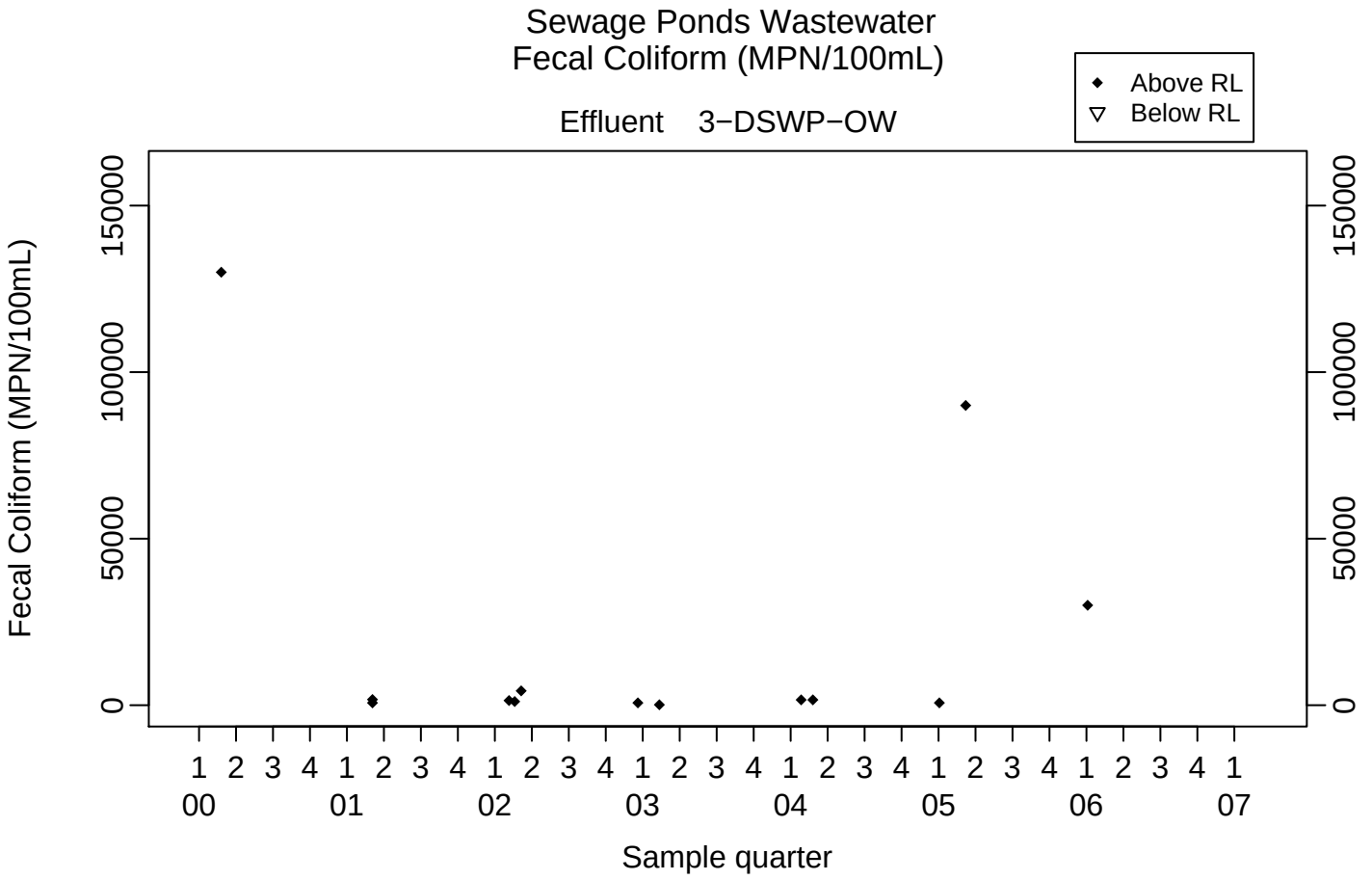

In−pond 3−ESWP−OW
Electrical Conductivity (umhos/cm)
0
2000
6000
10000
14000
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

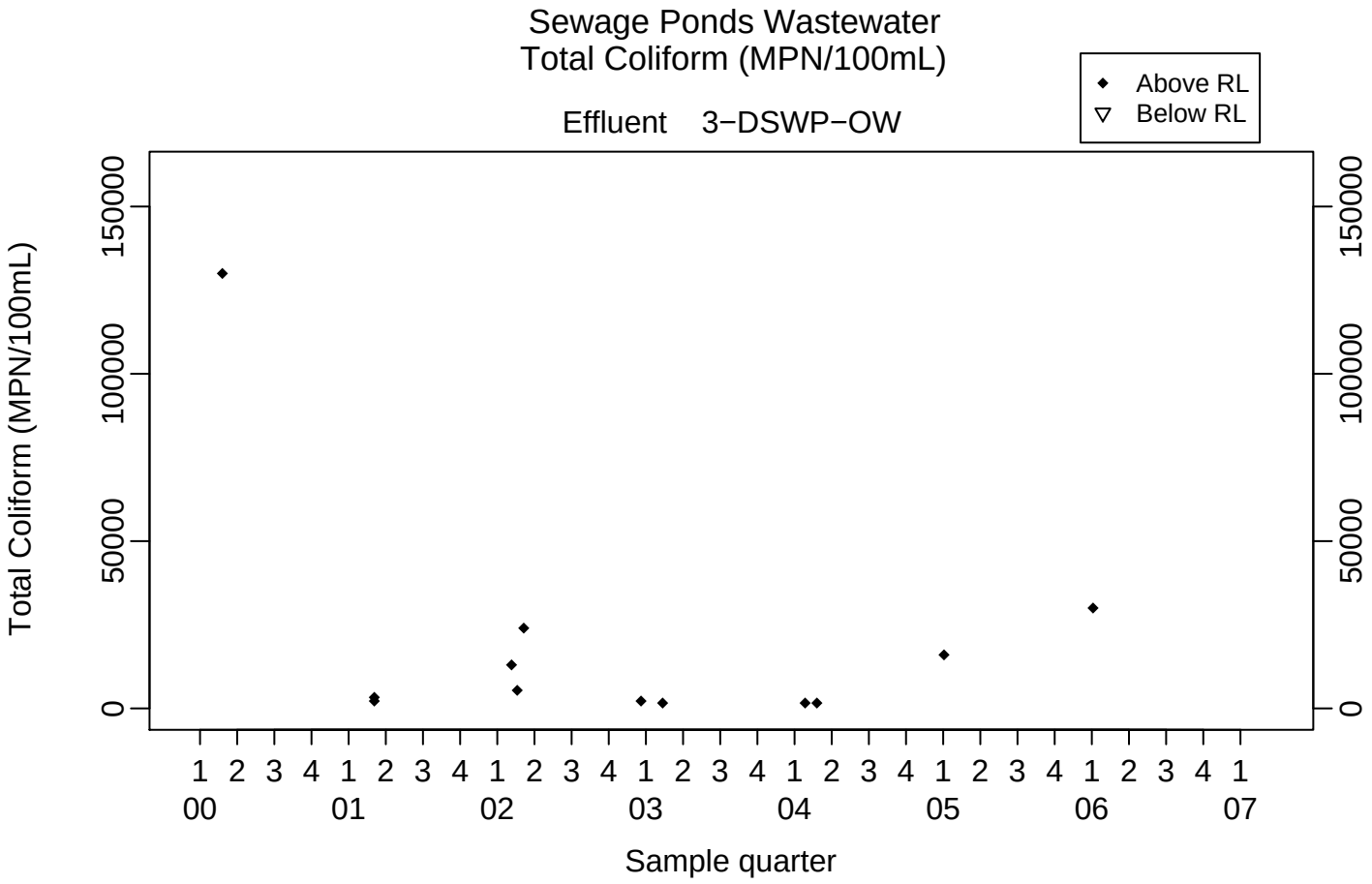

Sewage Ponds Wastewater
Electrical Conductivity (umhos/cm)
Effluent 3−DSWP−OW
Above RL
Below RL
Electrical Conductivity (umhos/cm)
0
2000
6000
10000
14000
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

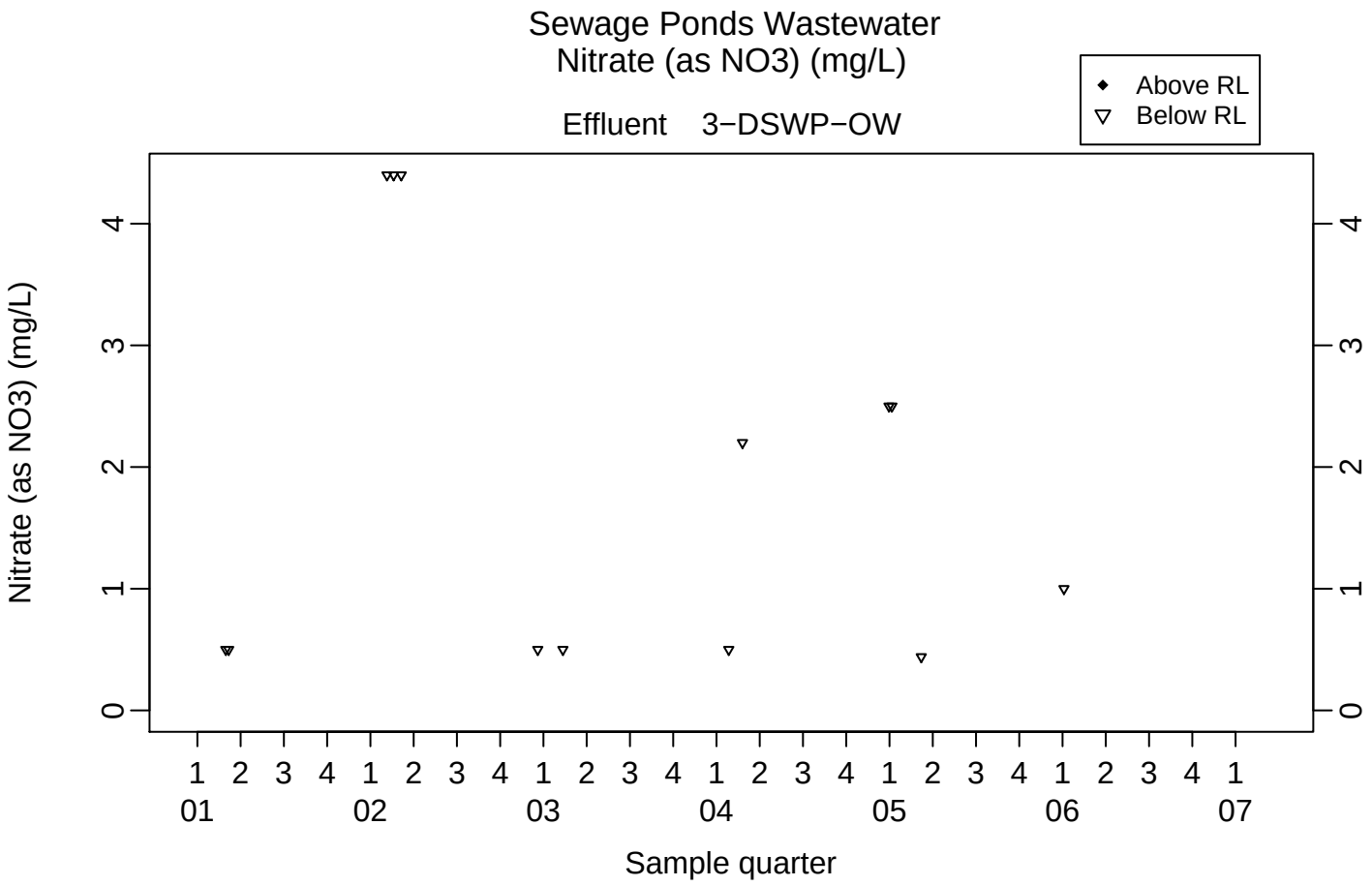

Sewage Ponds Wastewater
Dissolved Oxygen (mg/L)
In−pond 3−ESWP−OW
LL=1
Above RL
Below RL
Dissolved Oxygen (mg/L)
0
10
20
30
40
LL
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

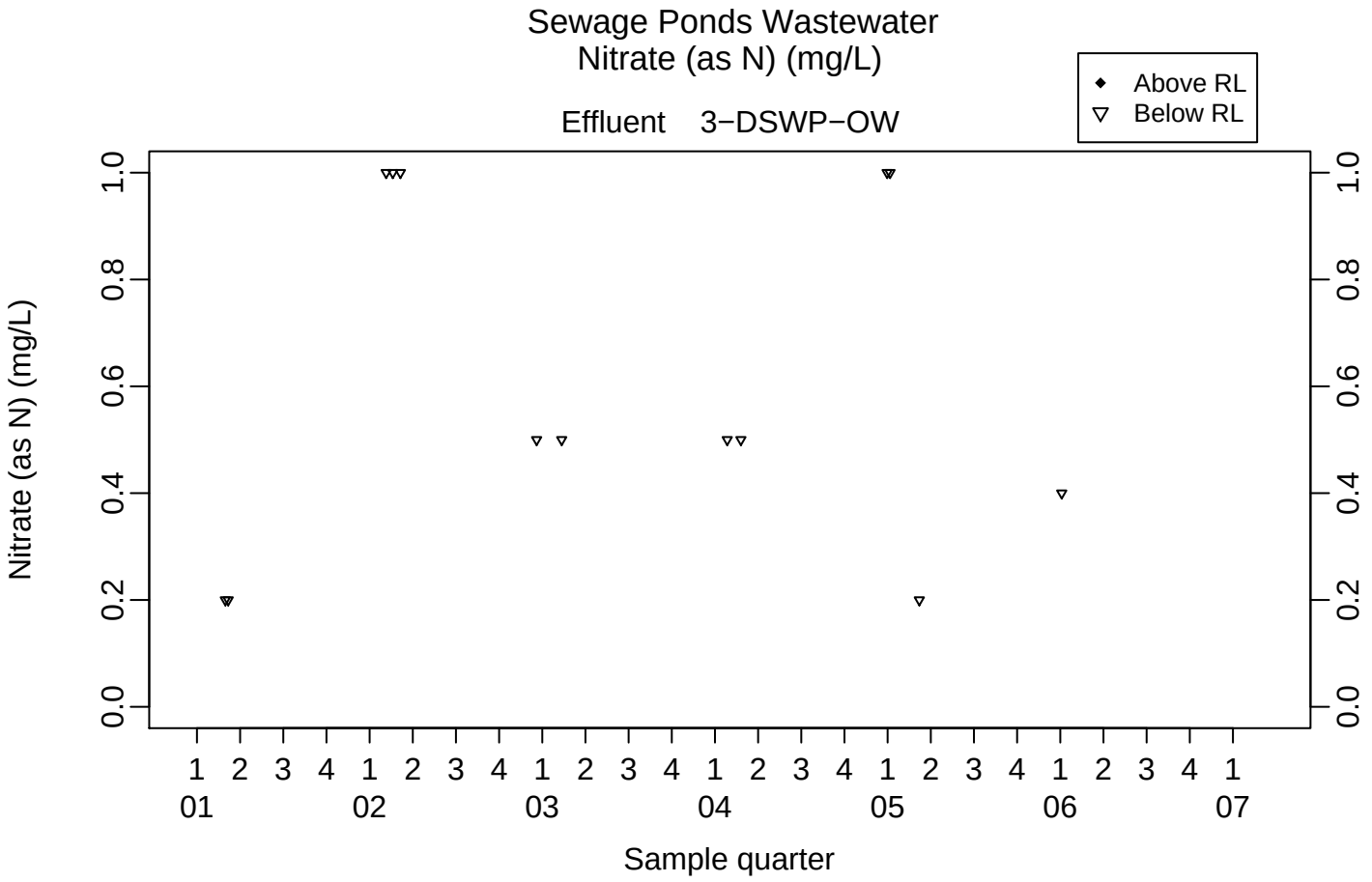

Sewage Ponds Wastewater
Biochemical Oxygen Demand (mg O/L)
Above RL
Below RL
Influent 3−ISWP−OW
Biochemical Oxygen Demand (mg O/L)
0
500
1000
1500
2000
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

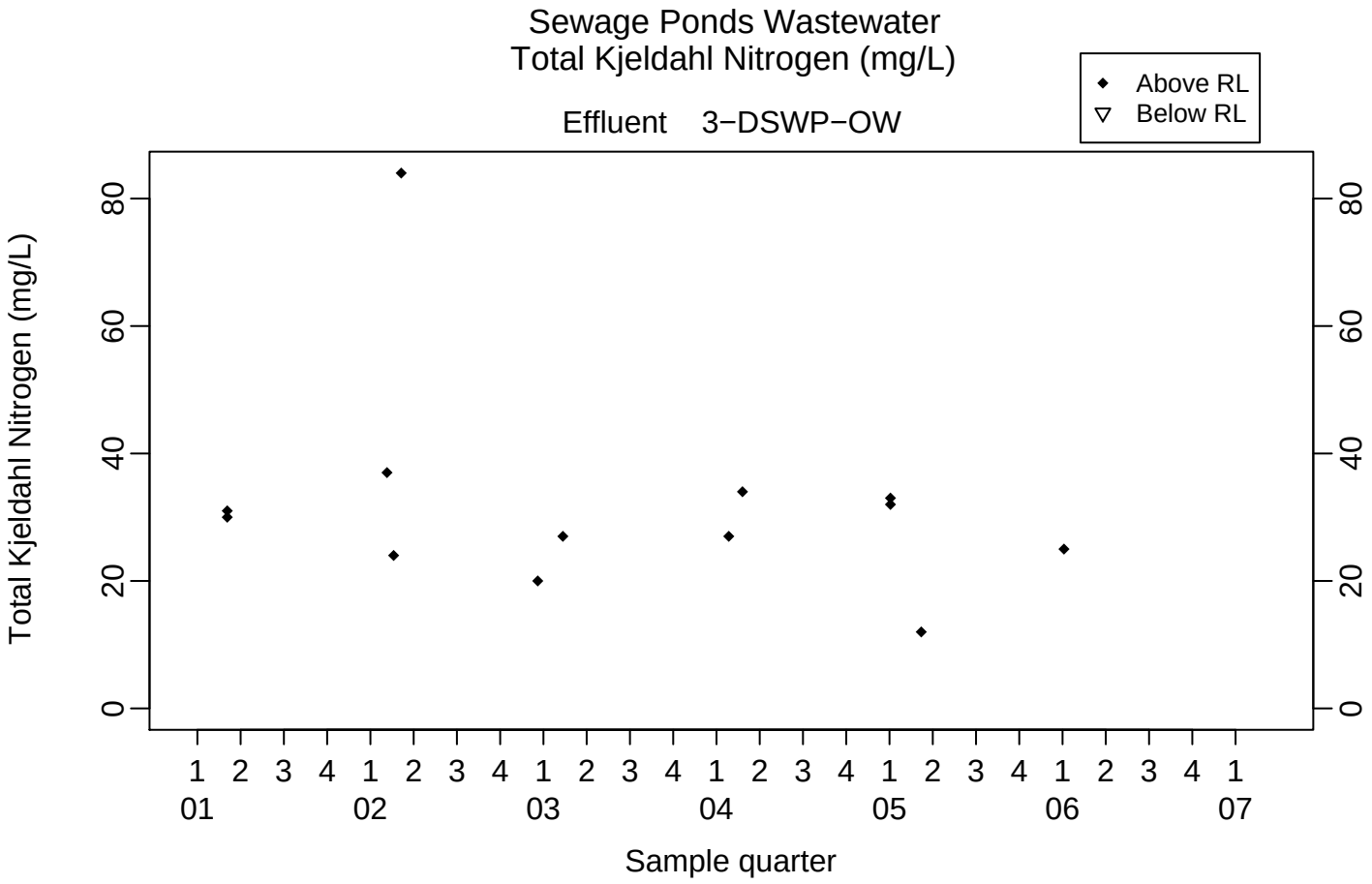

Effluent 3−DSWP−OW
Biochemical Oxygen Demand (mg O/L)
0
500
1000
1500
2000
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
97 98 99 00 01 02 03 04 05 06 07
Sample quarter

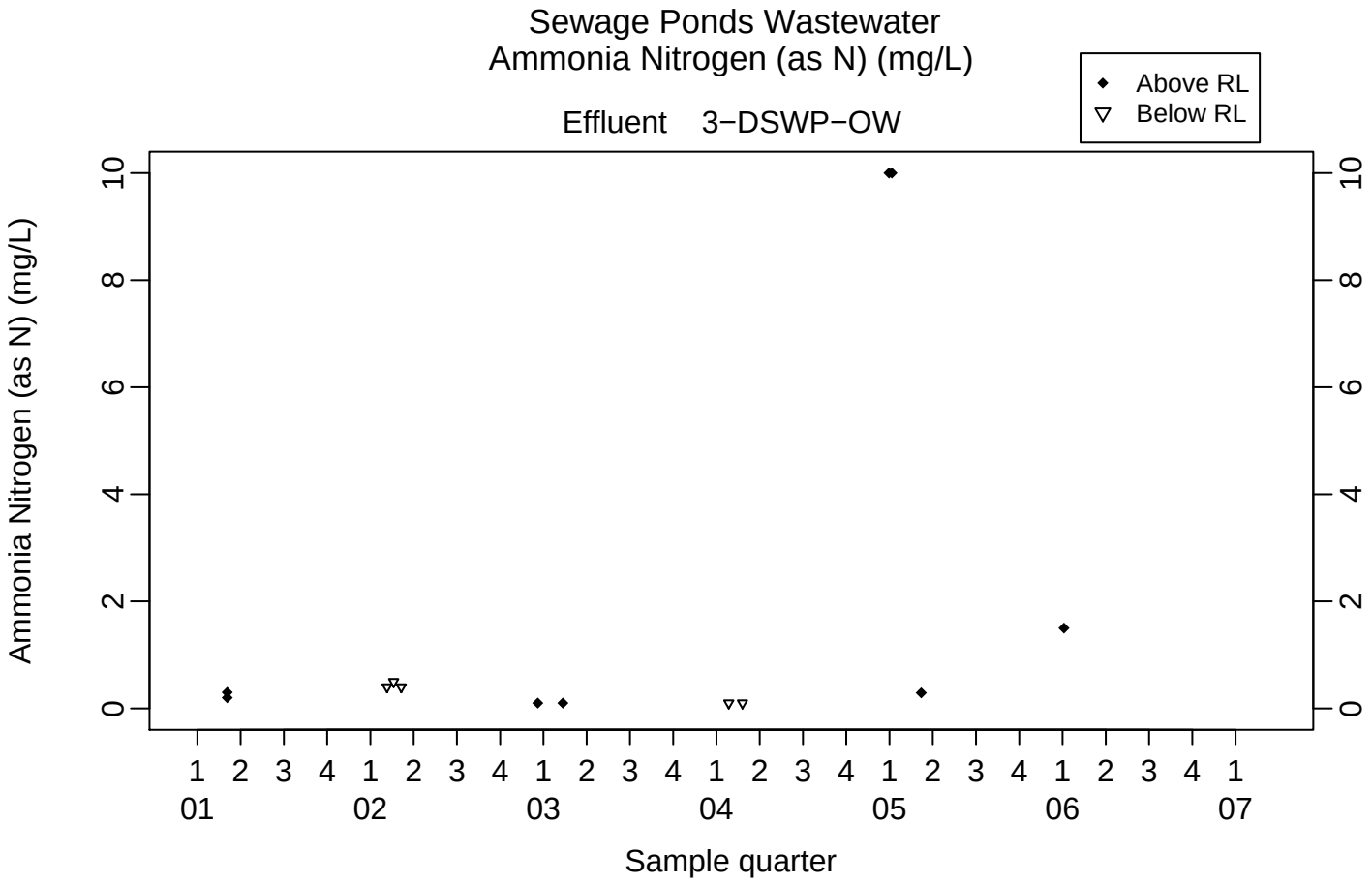

Sewage Ponds Wastewater
Fecal Coliform (MPN/100mL)
Effluent 3−DSWP−OW
Above RL
Below RL
Fecal Coliform (MPN/100mL)
0
50000
100000
150000
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
00 01 02 03 04 05 06 07
Sample quarter

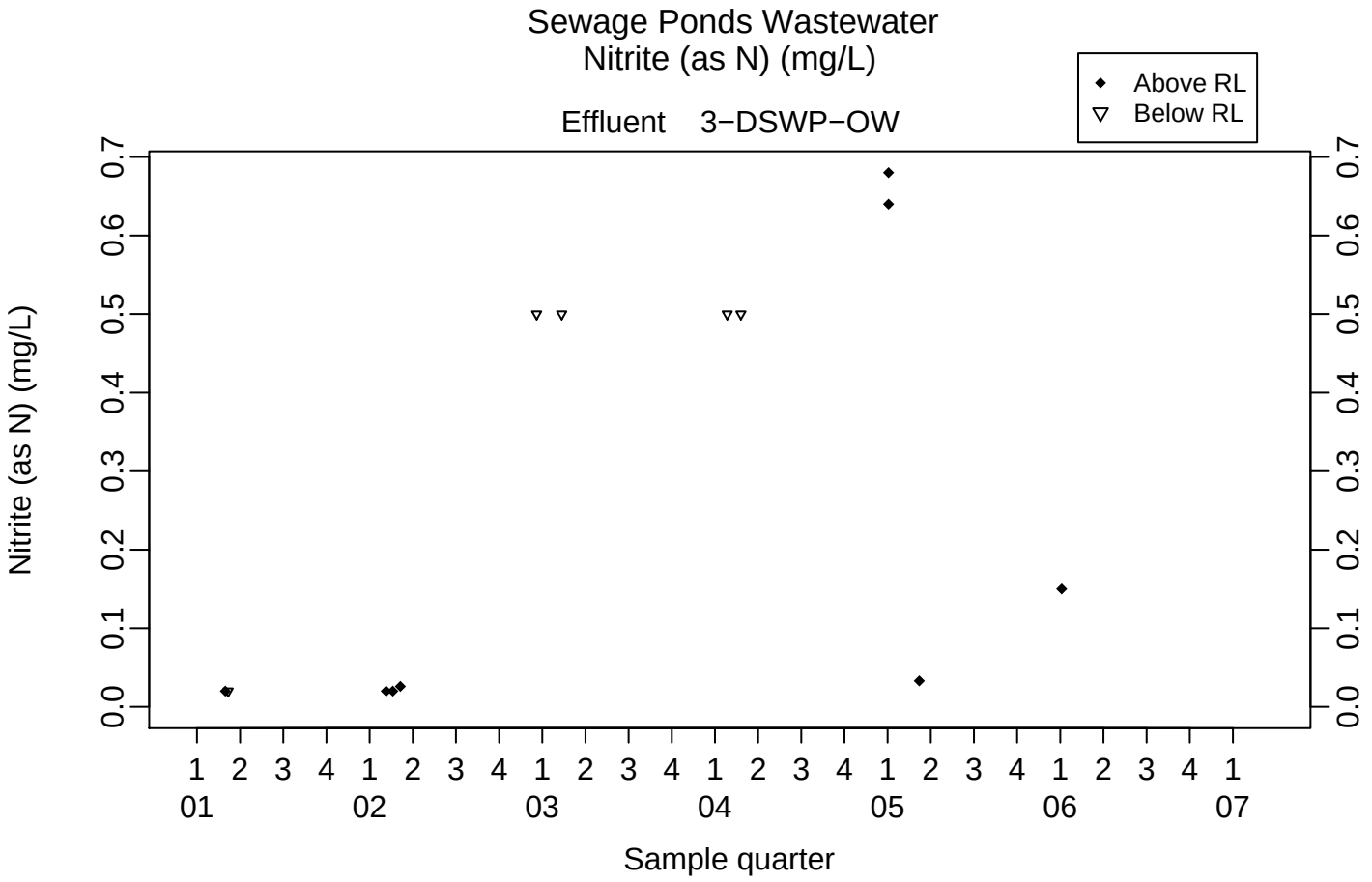

Sewage Ponds Wastewater
Total Coliform (MPN/100mL)
Effluent 3−DSWP−OW
Above RL
Below RL
Total Coliform (MPN/100mL)
0
50000
100000
150000
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
00 01 02 03 04 05 06 07
Sample quarter

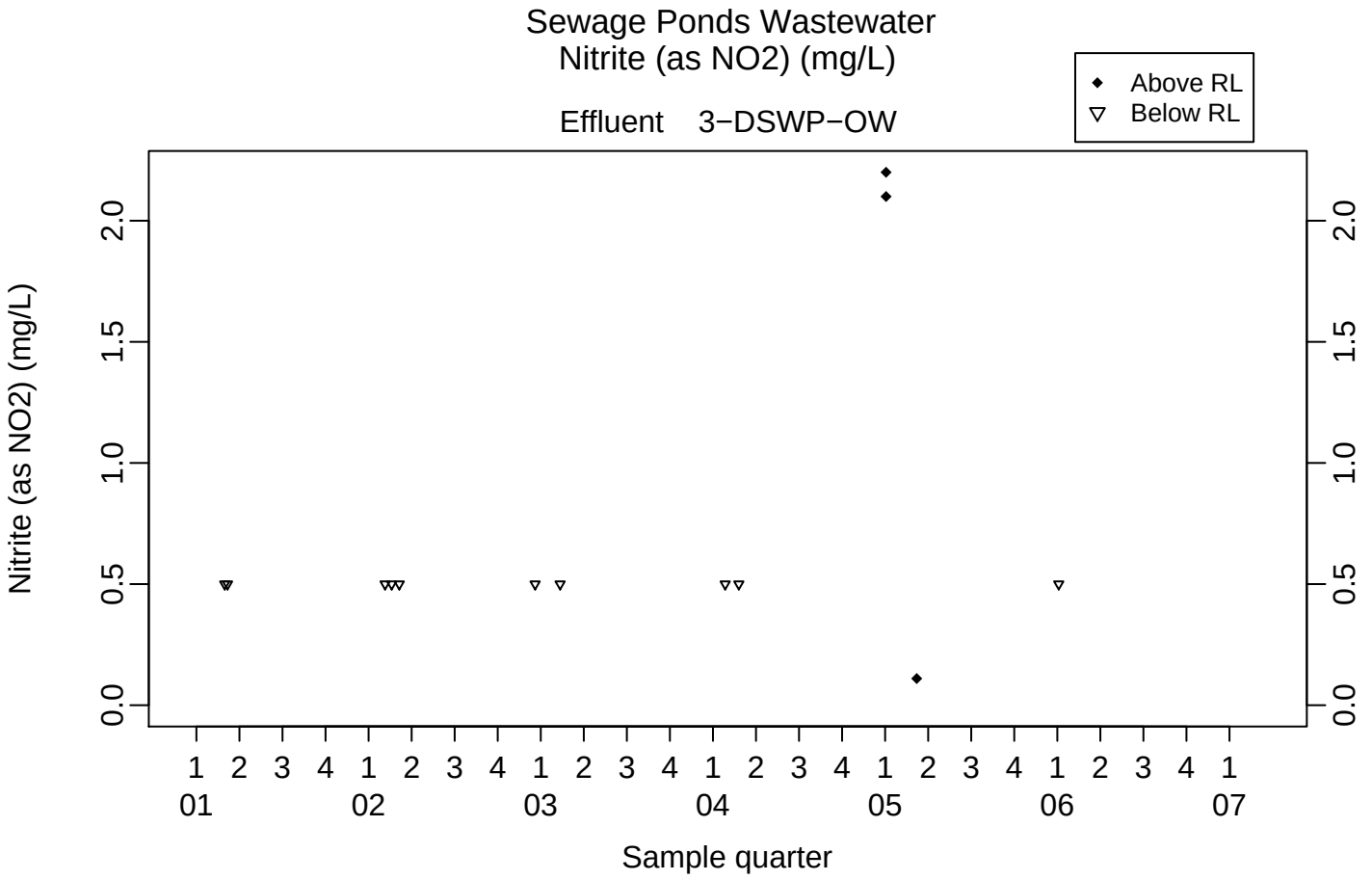

Sewage Ponds Wastewater
Nitrate (as NO3) (mg/L)
Effluent 3−DSWP−OW
Above RL
Below RL
Nitrate (as NO3) (mg/L)
0
1
2
3
4
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Wastewater
Nitrate (as N) (mg/L)
Effluent 3−DSWP−OW
Above RL
Below RL
Nitrate (as N) (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Wastewater
Total Kjeldahl Nitrogen (mg/L)
Effluent 3−DSWP−OW
Above RL
Below RL
Total Kjeldahl Nitrogen (mg/L)
0
20
40
60
80
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Wastewater
Ammonia Nitrogen (as N) (mg/L)
Effluent 3−DSWP−OW
Above RL
Below RL
Ammonia Nitrogen (as N) (mg/L)
0
2
4
6
8
10
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Wastewater
Nitrite (as N) (mg/L)
Effluent 3−DSWP−OW
Above RL
Below RL
Nitrite (as N) (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Wastewater
Nitrite (as NO2) (mg/L)
Effluent 3−DSWP−OW
Above RL
Below RL
Nitrite (as NO2) (mg/L)
0.0
0.5
1.0
1.5
2.0
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1
01 02 03 04 05 06 07
Sample quarter

Annual Summary Tables of Sewage Evaporation and Percolation Ponds Wastewater Monitoring Data

Table D-1. 2006 summary of sewage pond observations.

Month	Freeboard[a]	Color	Odor	Levee condition
January	0.61 –0.55 [b]	Green	Slight	Animal burrows and erosion are okay, weed control is okay
February	0.59 [b]–0.60 [b]	Green	None to slight	Animal burrows and erosion are okay, weed control is okay
March	0.58 [b]–0.59 [b]	Green	None to slight	Animal burrows and erosion are okay, weed control is okay
April	0.61-0.57	Green to green-brown	Slight	Animal burrows and erosion are okay, weed control is okay
May	0.62-0.71	Brown to brown-green	None to slight	Animal burrows and erosion are okay, weed control is okay
June	0.71-0.74	Green	None to slight	Animal burrows and erosion are okay, weed control is okay
July	0.70 –0.65	Green	None to slight	Animal burrows and erosion are okay, weed control is okay
August	0.69–0.74	Green	Slight	Animal burrows and erosion are okay, weed control is okay
September	0.75–0.74	Green	Slight	Animal burrows and erosion are okay, weed control is okay
October	0.72–0.75	Green	Slight	Animal burrows and erosion are okay, weed control is okay
November	0.69–0.73	Green to green-brown	Slight	Animal burrows and erosion are okay, weed control is okay
December	0.64-0.69	Green	Slight	Animal burrows and erosion are okay, weed control is okay

[a] Minimum freeboard is 0.61 m = 2 ft.
[b] Freeboard in the evaporation pond was slightly less than 0.61 m (2 ft), as the evaporation pond overfilled and then continuously discharged to the percolation pond.

Table D-2. 2006 sewage wastewater influent monitoring results (Location ISWP).

Parameter	Permit limits	First quarter	Second quarter	Third quarter	Fourth quarter
pH (units)	6.5 < pH < 10	8.7	8.5	7.9	8.6
EC (μmhos/cm)	None	1,802	1,420	1,070	2,150
BOD (mg/L)	None	390	180	122	1,110/890[a]

[a] Sample and duplicate sample results for intralaboratory comparison.

Table D-3. 2006 sewage evaporation pond monitoring results (Location ESWP).

Parameter	Permit limits	First quarter	Second quarter	Third quarter	Fourth quarter
pH (units)	None	9.9	9.6	9.5	9.0
EC (μmhos/cm)	None	4,560	4,850	5,770	6,110
Laboratory DO (mg/L)	1.0 (min.)	22.64	5.89	21.7	11.5

Table D-4. 2006 sewage percolation pond discharge location (Location DSWP).

Parameter	Permit limits	January 4
pH (units)	6.5 < pH < 10	9.4
EC (μmhos/cm)	None	4,620
BOD (mg/L)	None	45
Fecal coliform (MPN [a]/100 mL)	None	30,000
Total coliform (MPN [a]/100 mL)	None	30,000
Nitrate as NO_3	None	<1.0
Nitrite as N	None	0.15
Ammonia as N	None	1.5
Total Kjeldahl nitrogen	None	25

[a] MPN = Most probable number (of organisms).

Appendix E

Annual Summary Plots and Table of Sewage Evaporation and Percolation Ponds Ground Water Monitoring Data

Appendix E

This appendix contains graphical summaries of ground water monitoring data since 1993 and a tabular summary of 2006 ground water monitoring data from the sewage ponds ground water network.

The plots display the field parameter of ground water elevation and the analytical results of pH, electrical conductivity (EC), total coliform bacteria, fecal coliform bacteria, and finally nitrate (as NO_3). The upgradient (background) monitoring wells W-7E, W-7ES, and W-7PS are always plotted first for each analyte.

Each two-dimensional graph shows concentration plotted on the vertical axis versus time on the horizontal axis. Units of measure are given on the vertical axis label and in the header at the top of each page. Values above the analytical reporting limit for each analyte are plotted as solid diamonds, and values below the reporting limit are plotted as open inverted triangles.

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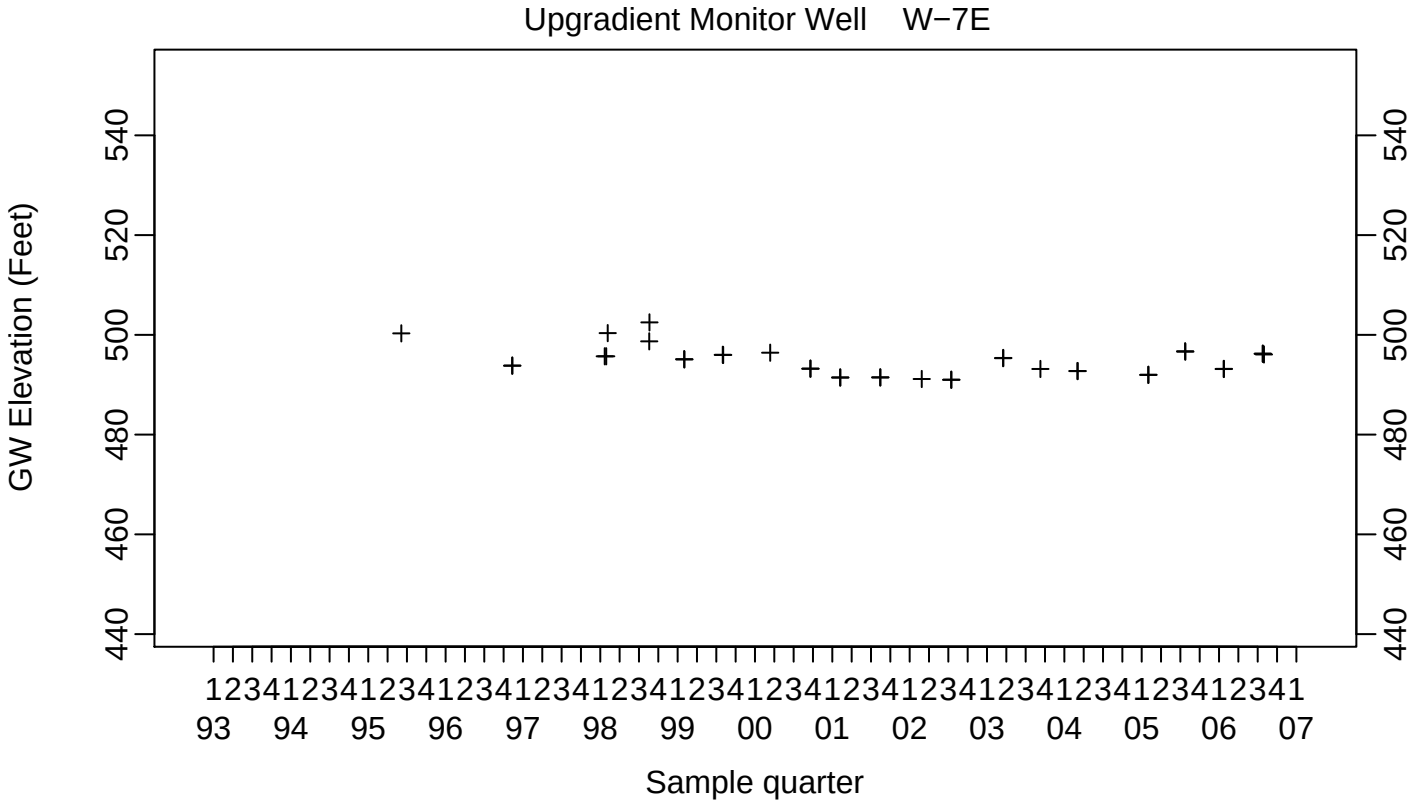
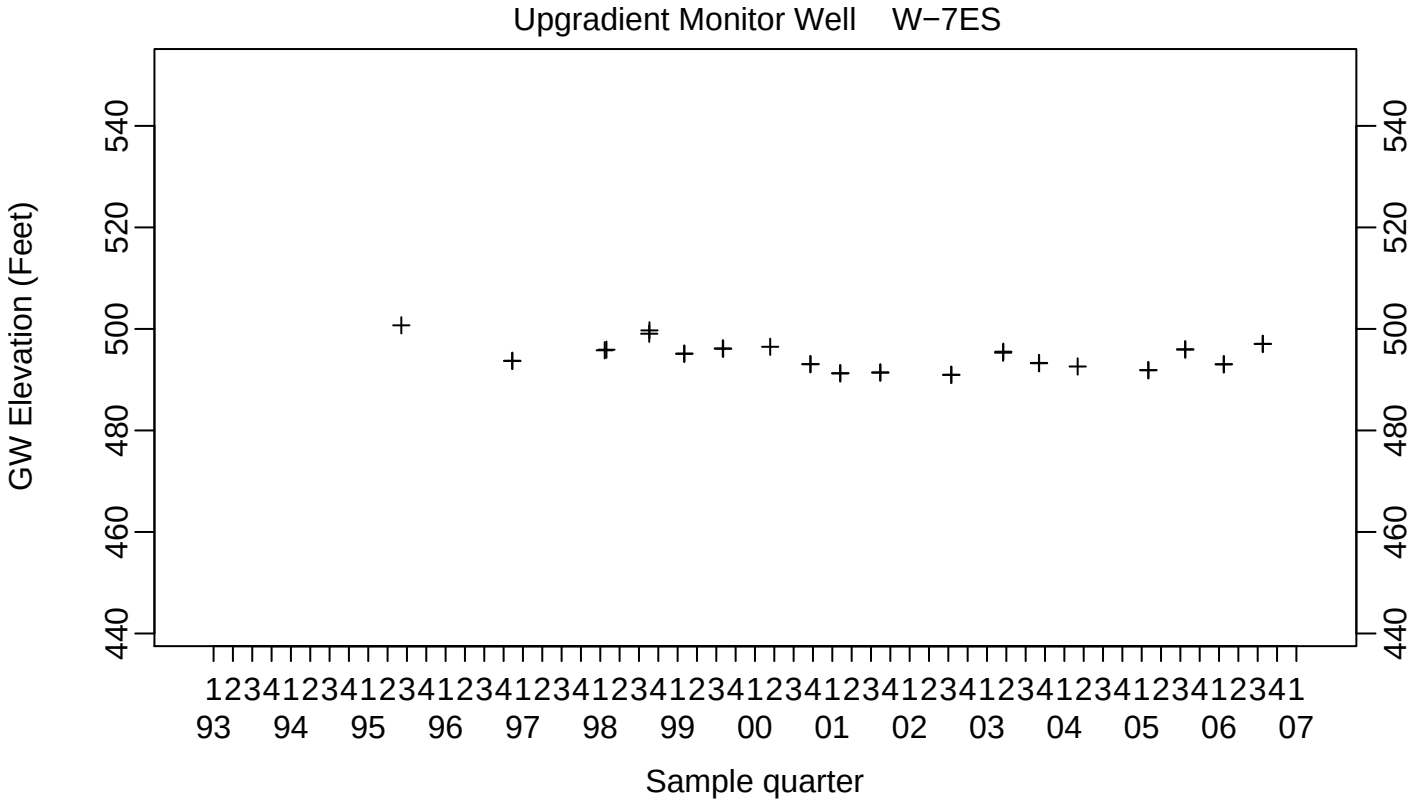
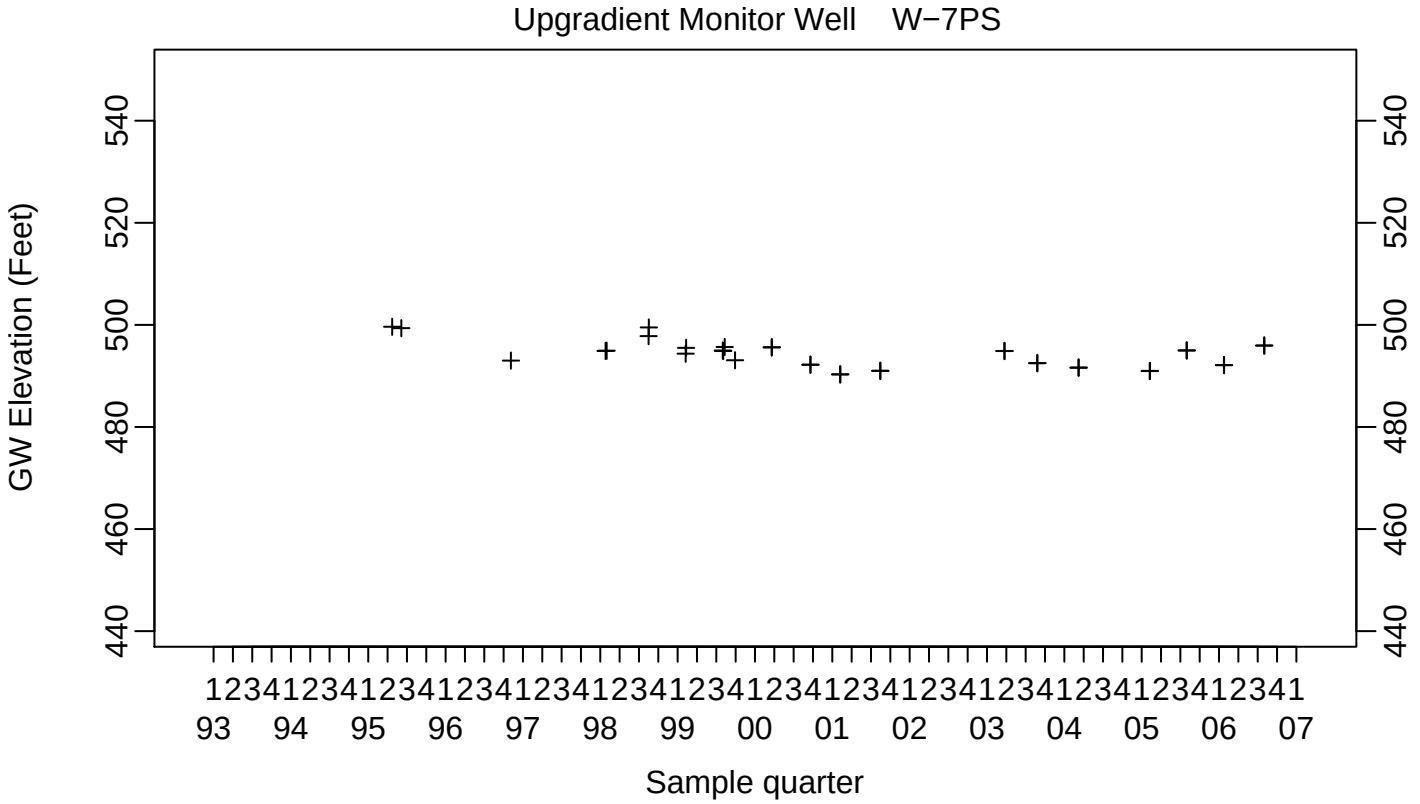
Annual Plots of
Sewage Evaporation and Percolation Ponds
Ground Water Monitoring Data

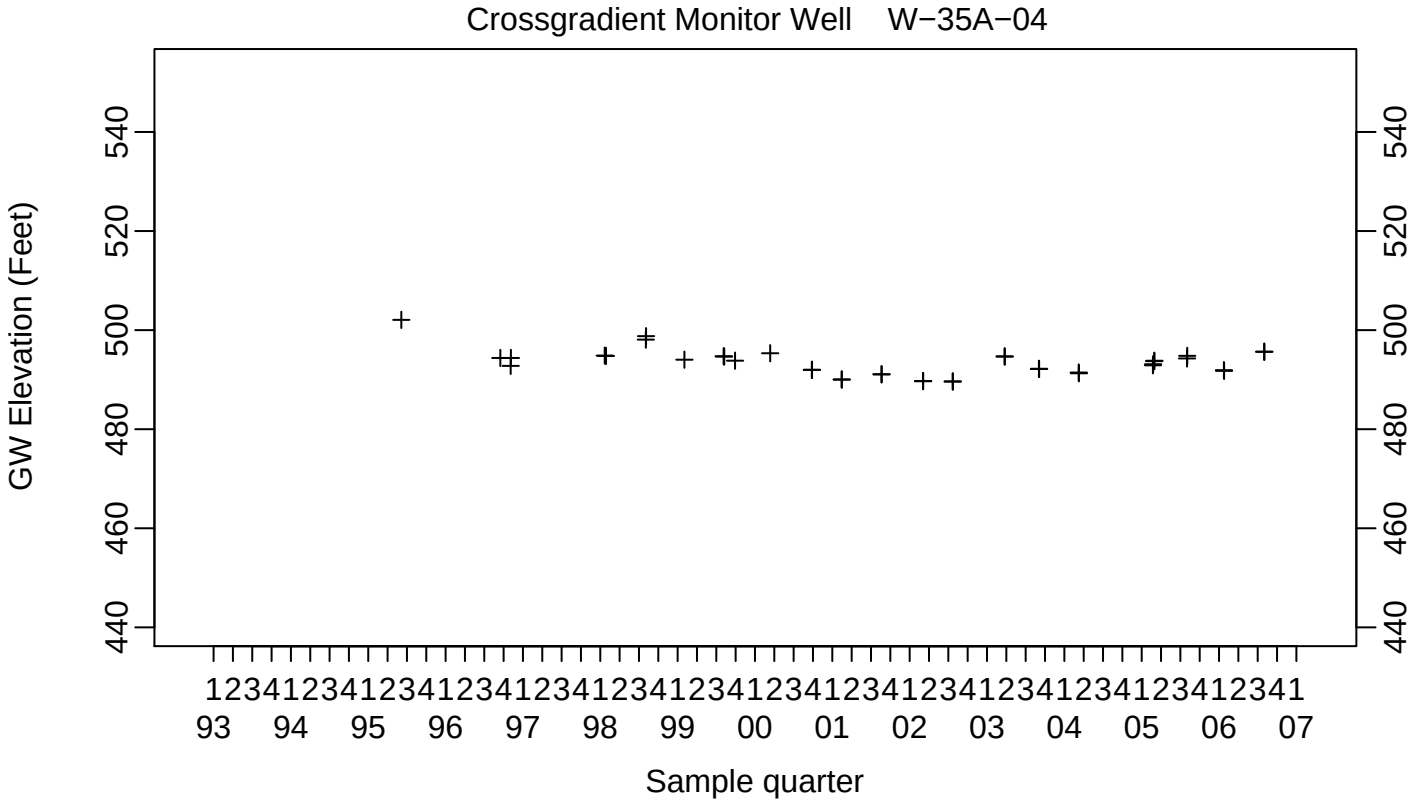
Sewage Ponds Ground Water
GW Elevation (Feet)



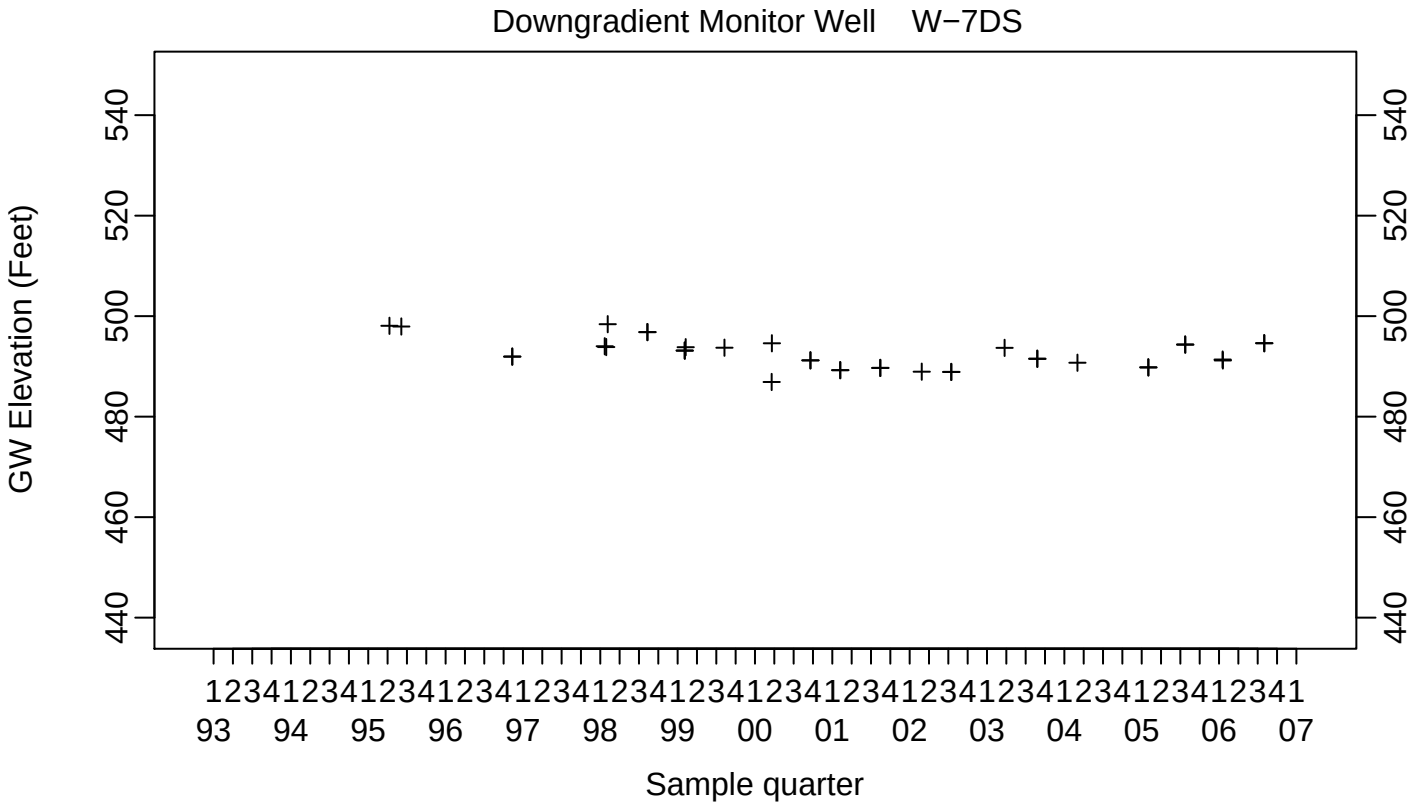


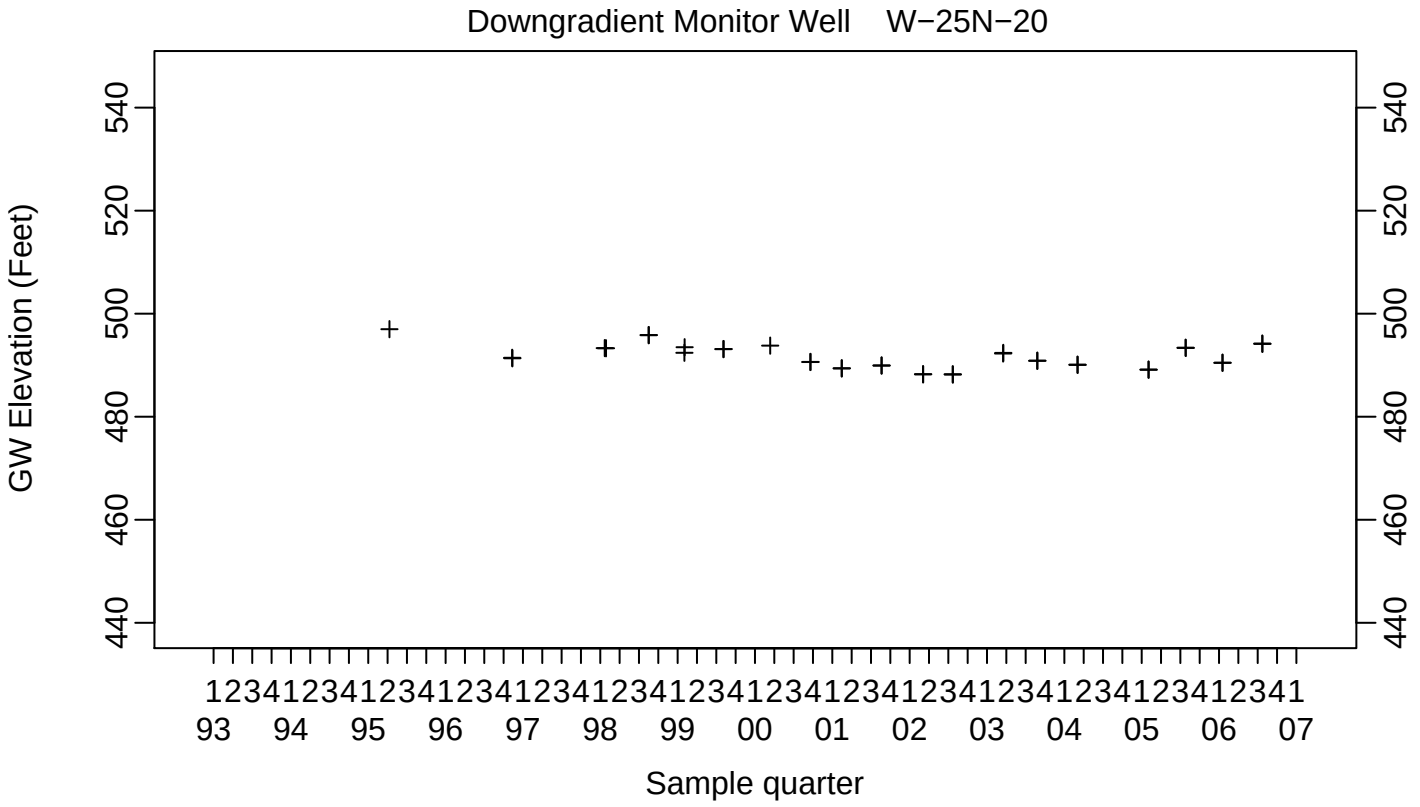
Sewage Ponds Ground Water
GW Elevation (Feet)



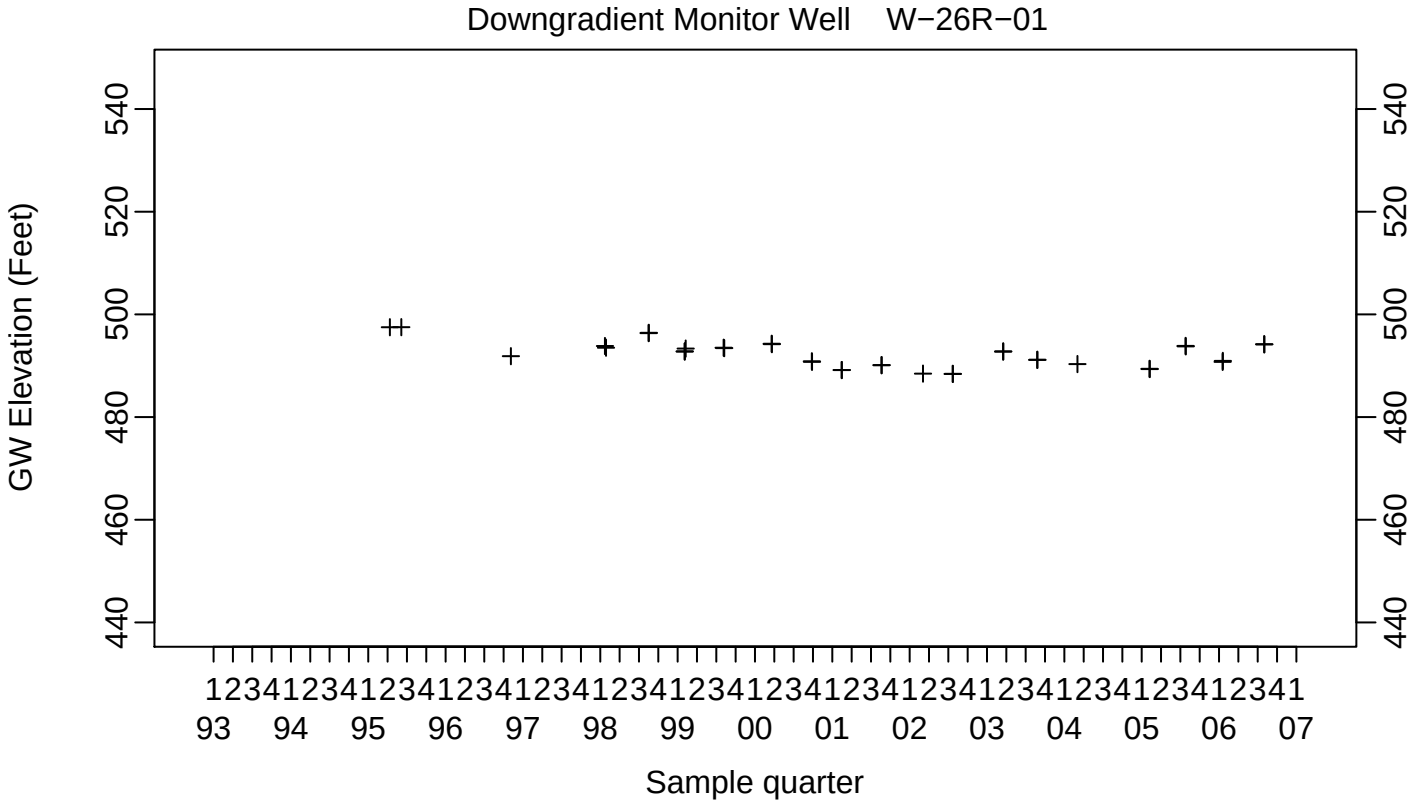


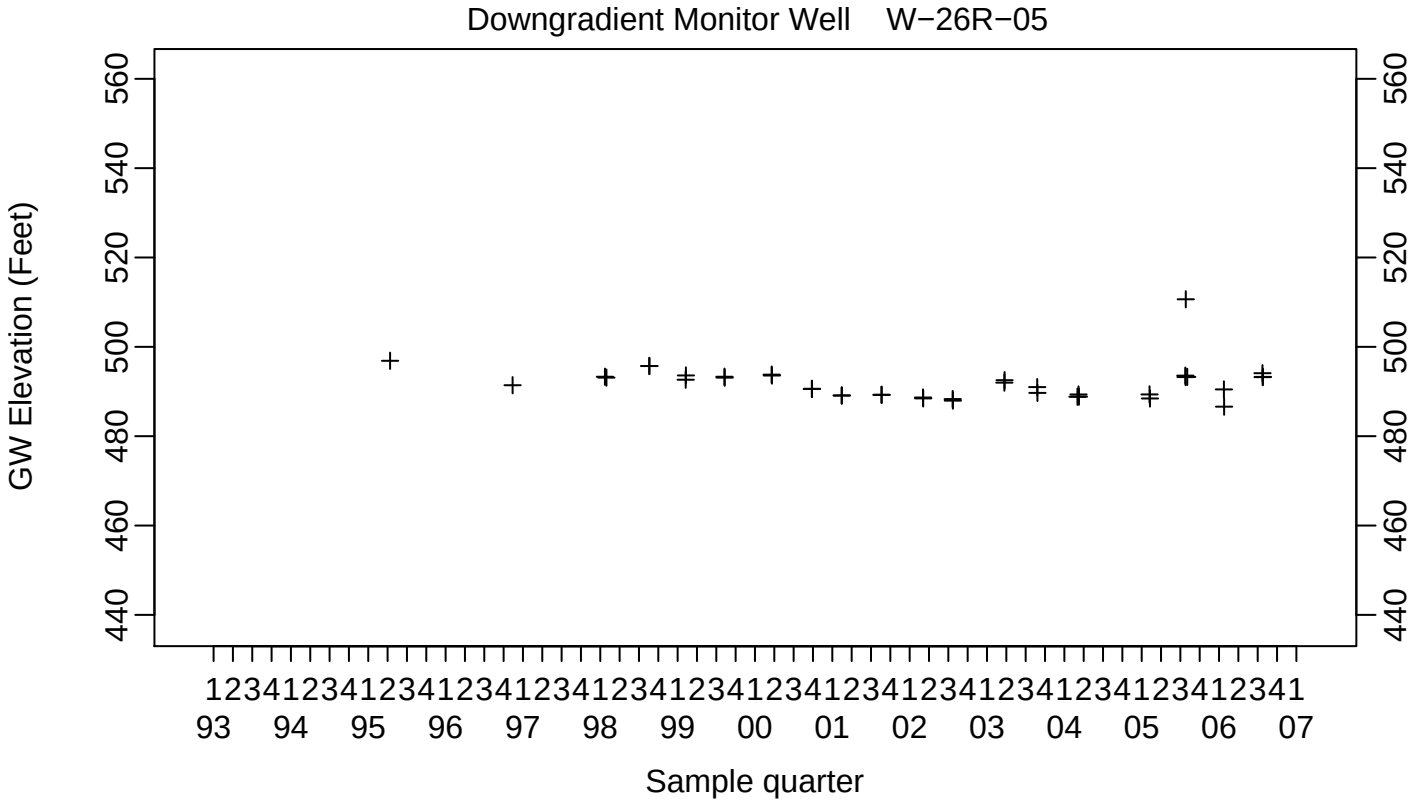
Sewage Ponds Ground Water
GW Elevation (Feet)



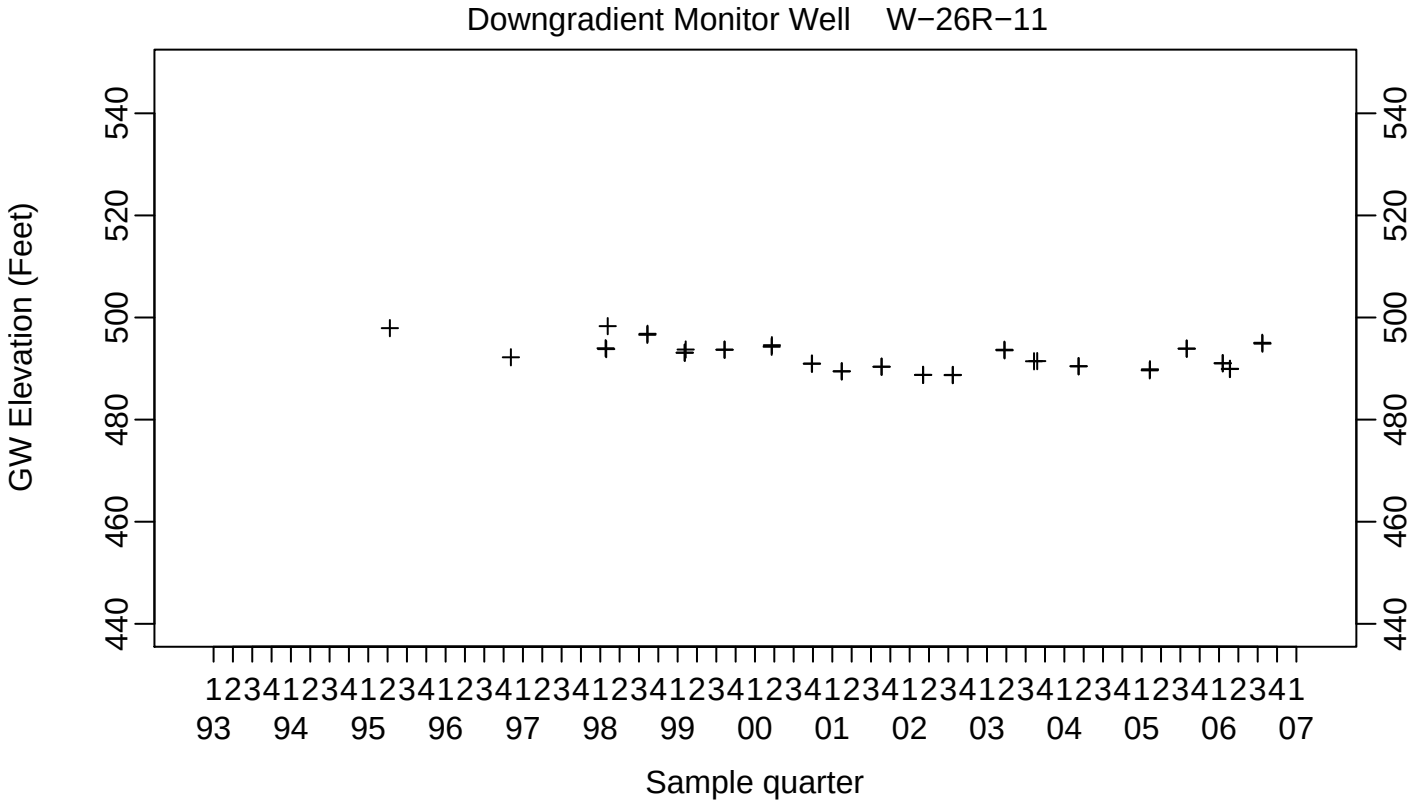


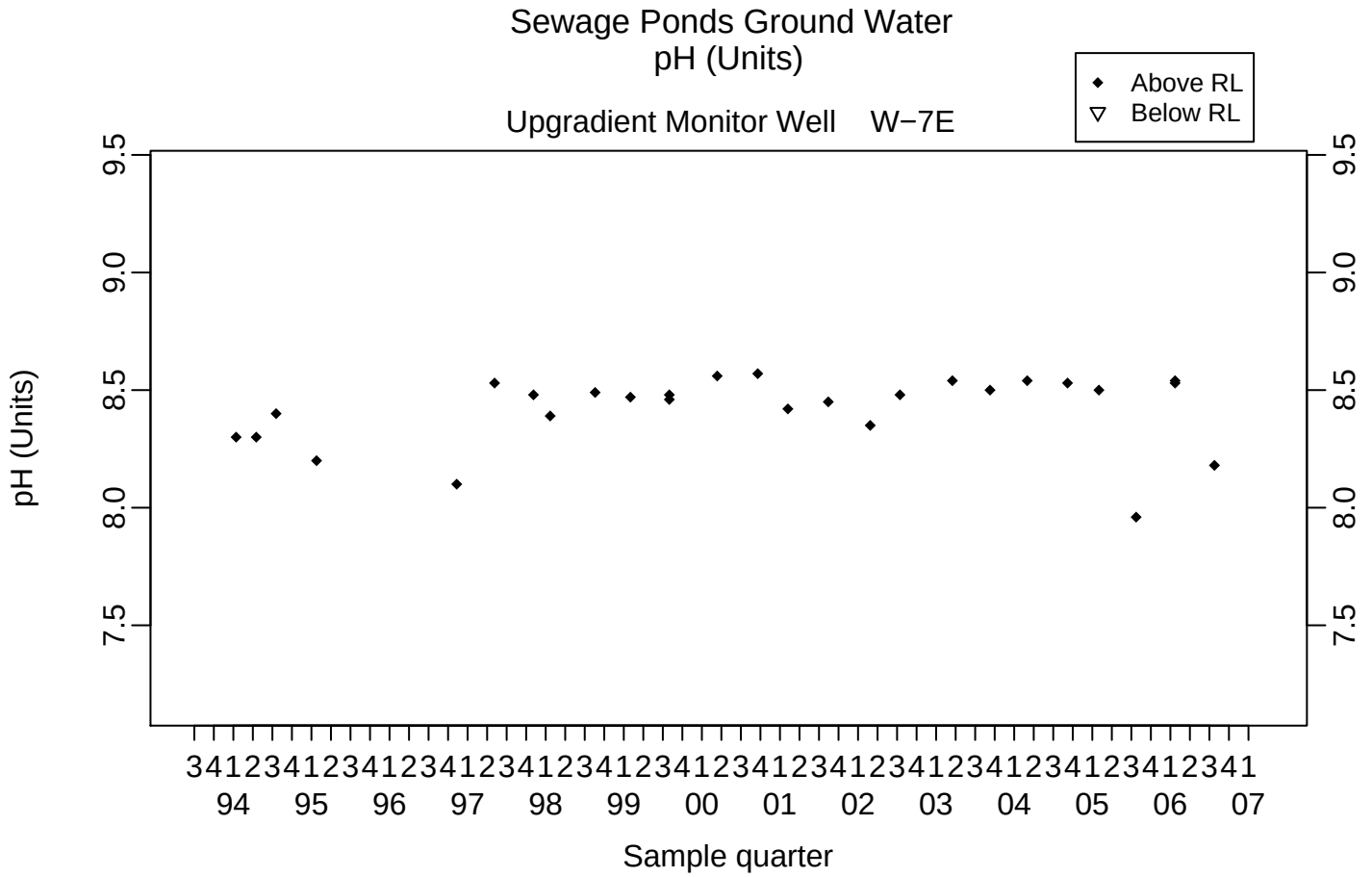
Sewage Ponds Ground Water
GW Elevation (Feet)

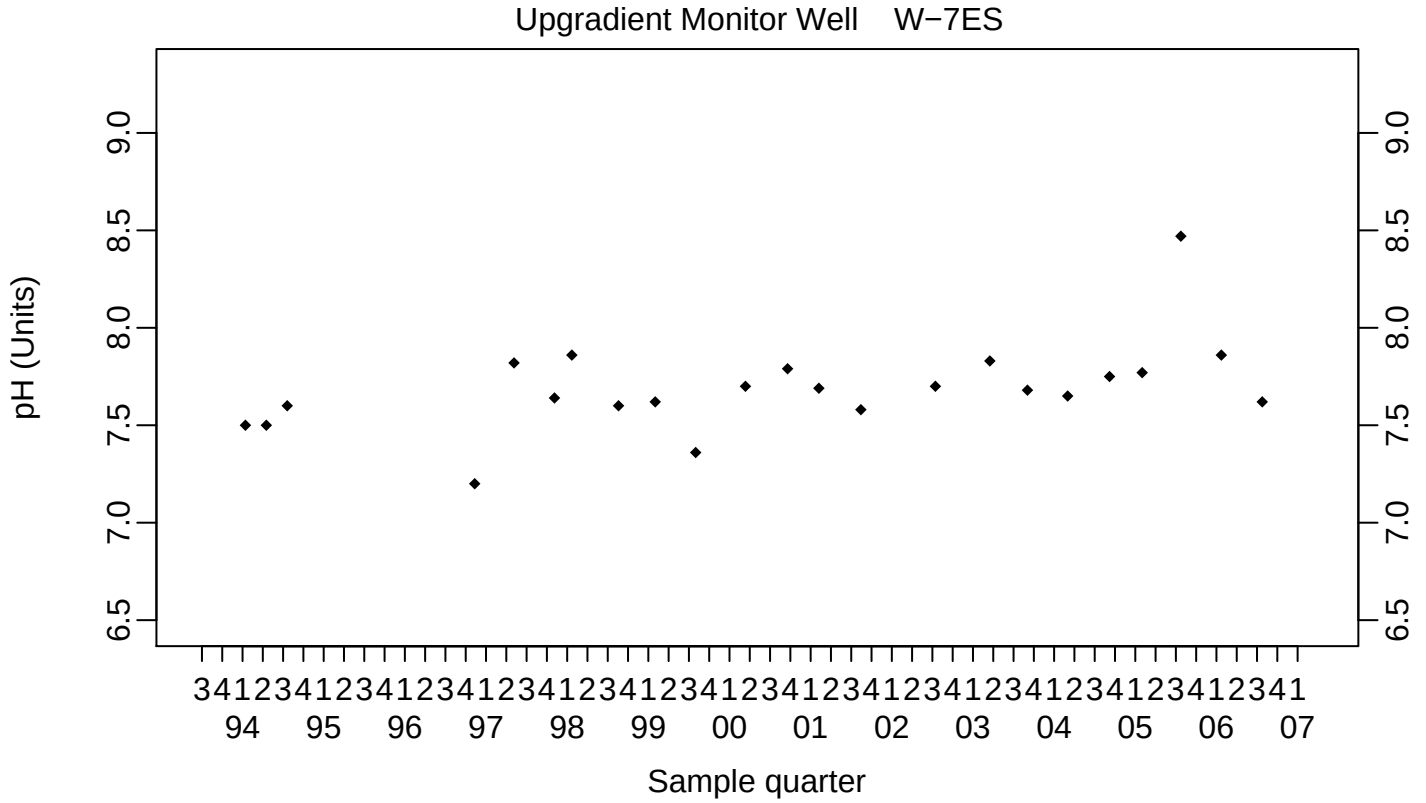


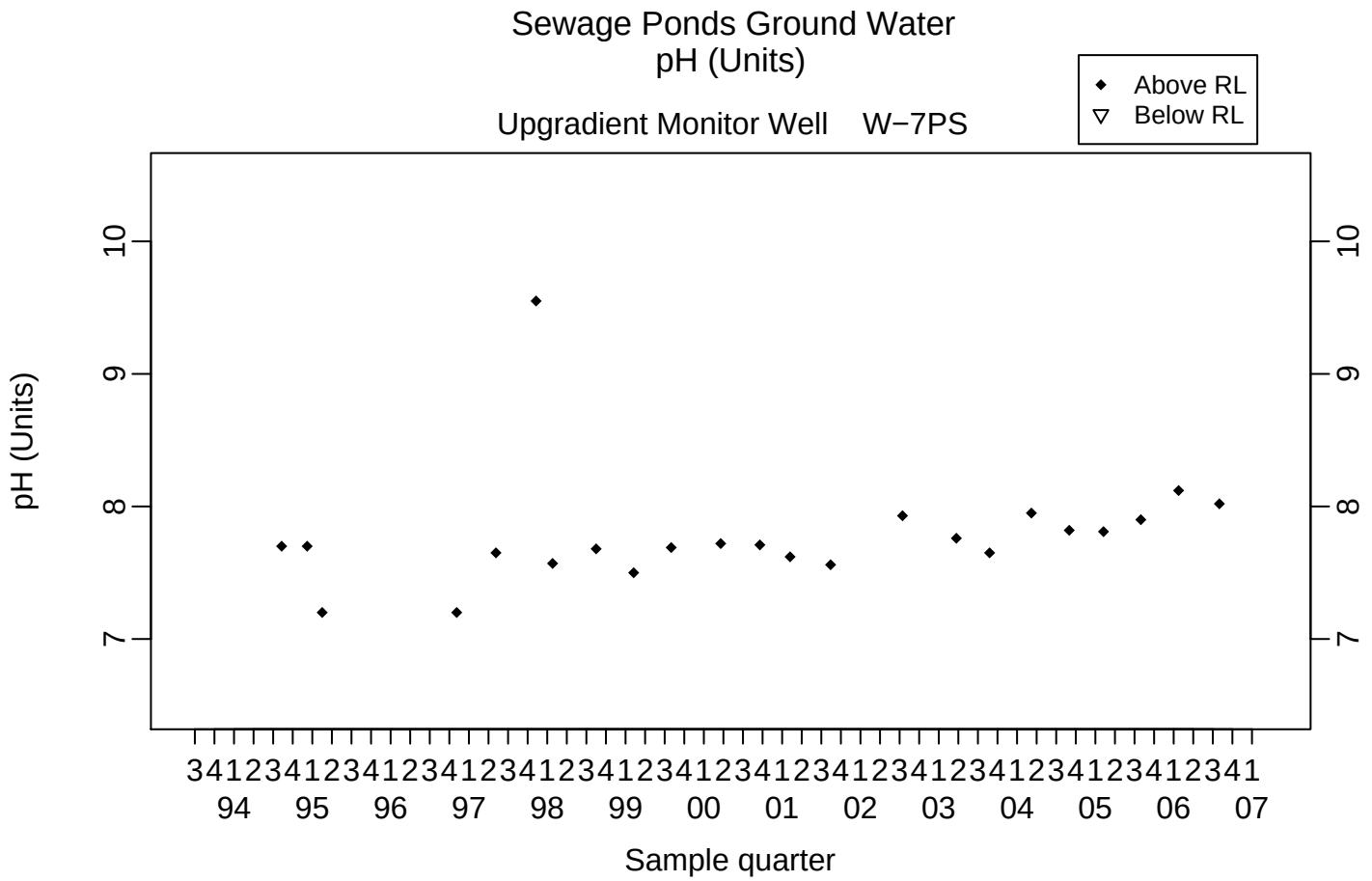


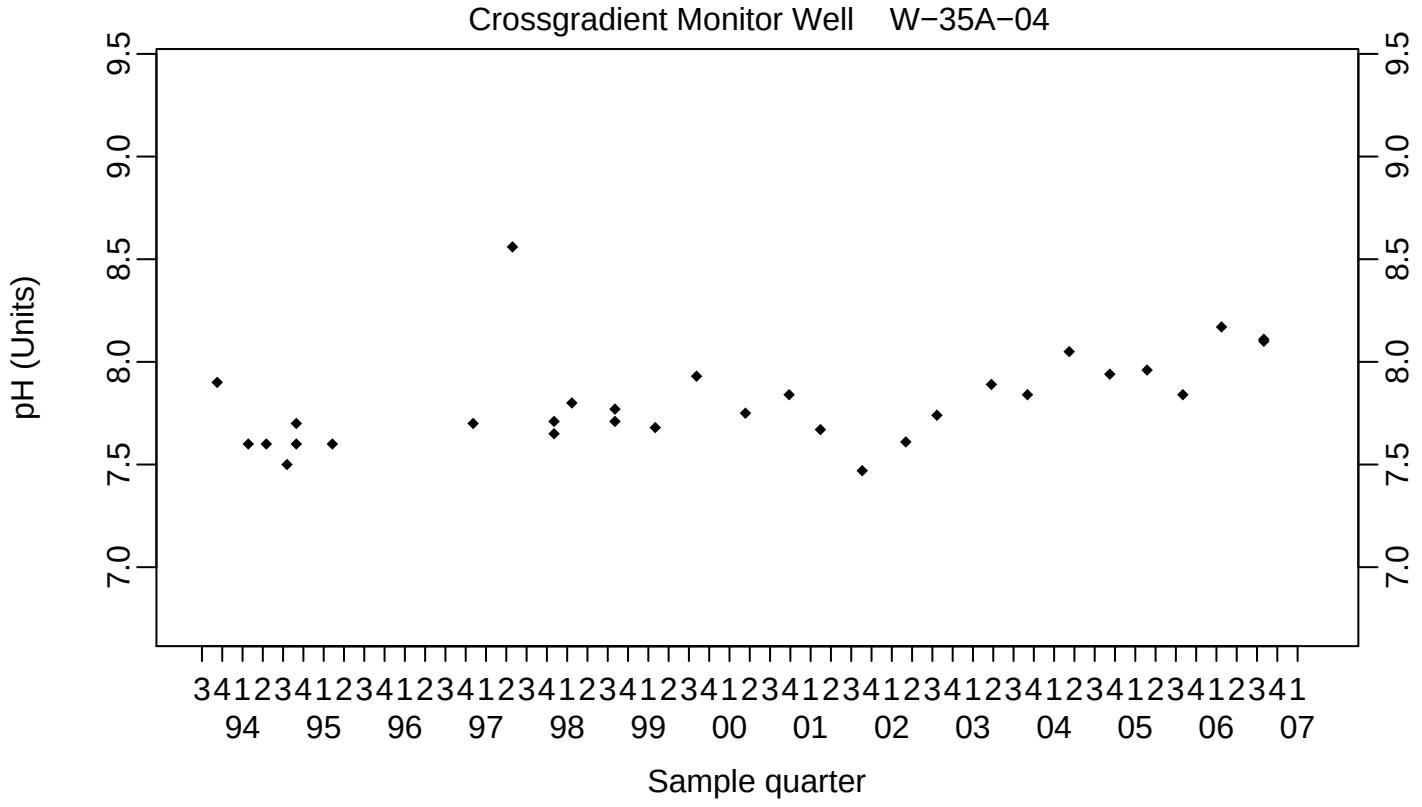
Sewage Ponds Ground Water
GW Elevation (Feet)

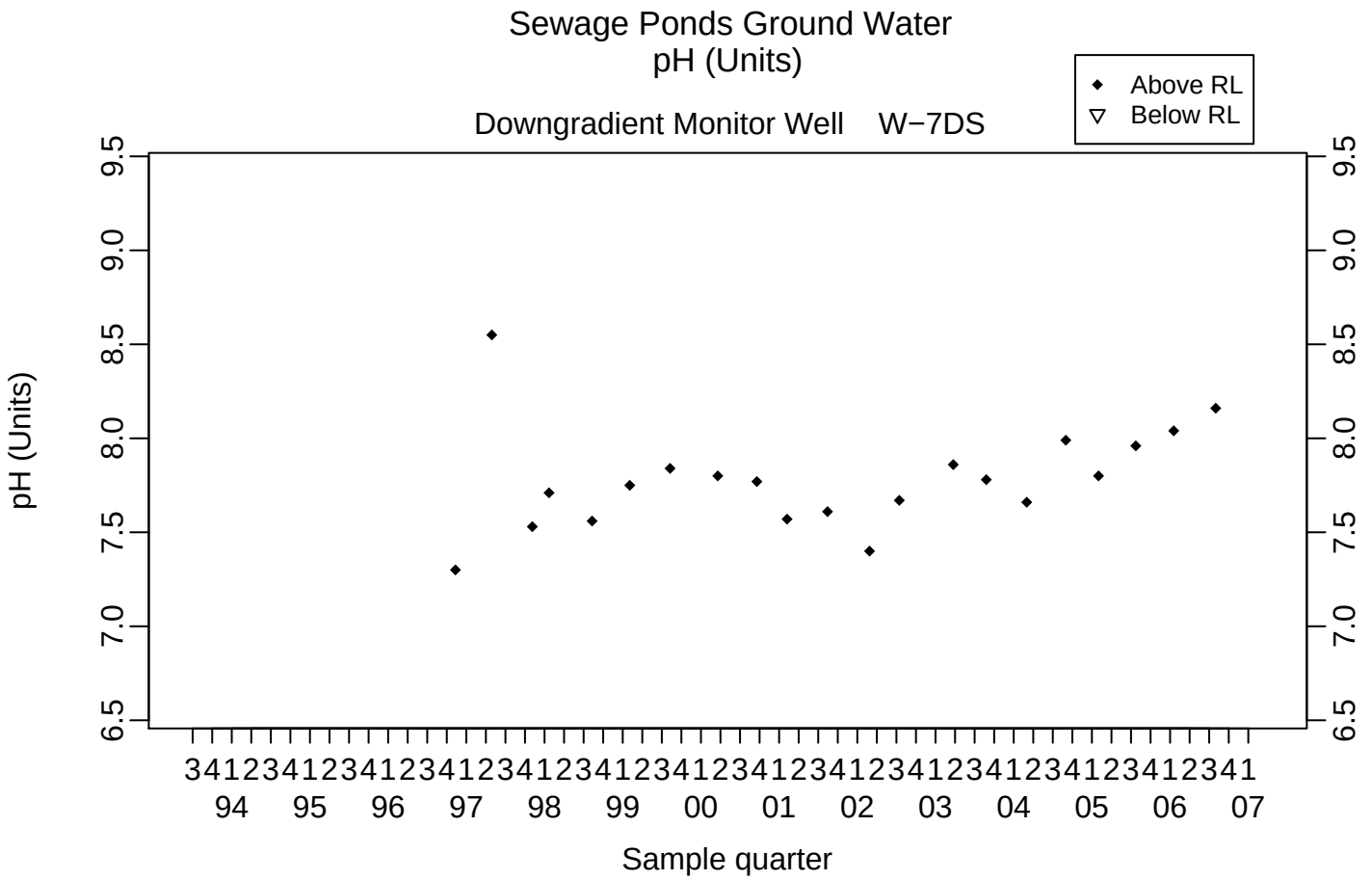


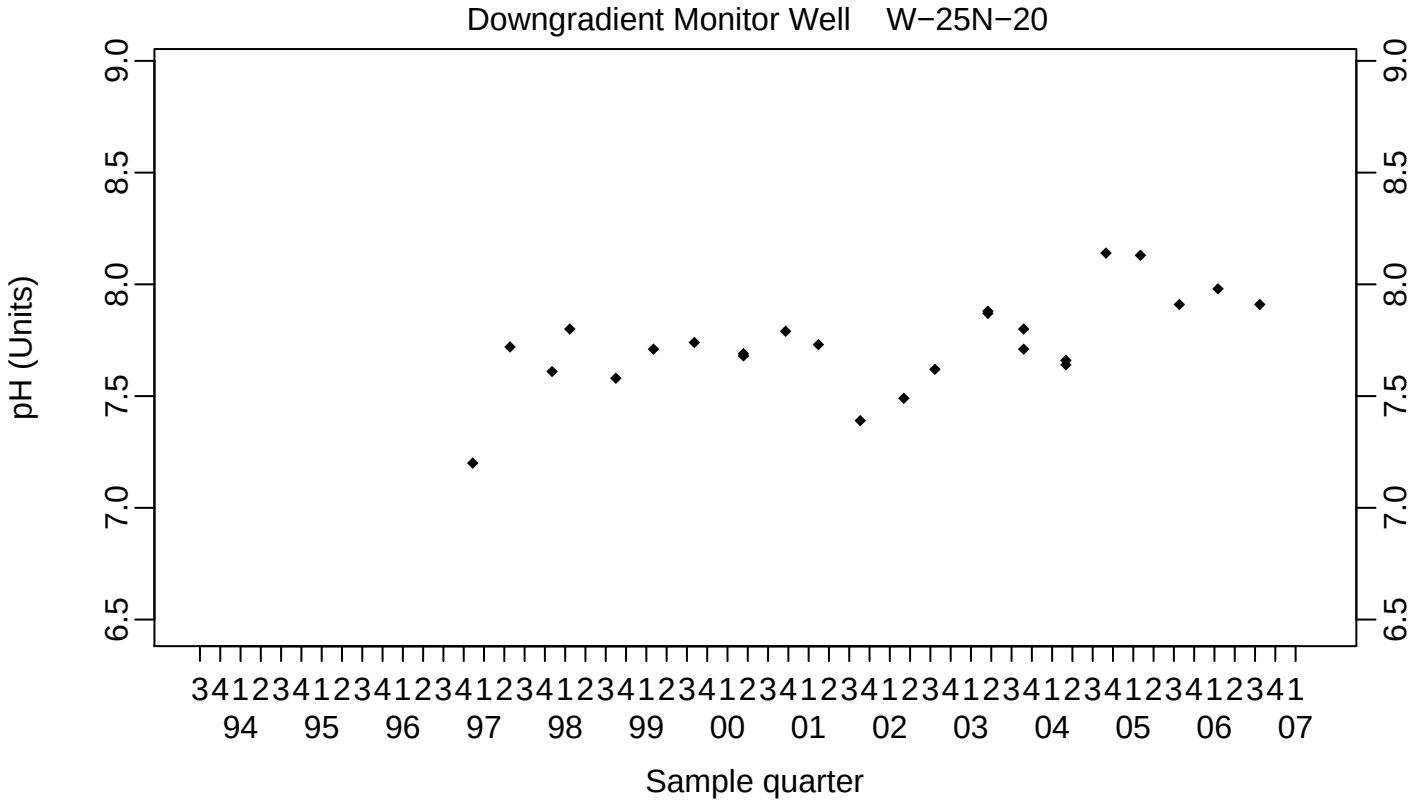

Sewage Ponds Ground Water
pH (Units)
Above RL
Below RL
Upgradient Monitor Well W−7E
pH (Units)
9.5
9.0
8.5
8.0
7.5
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

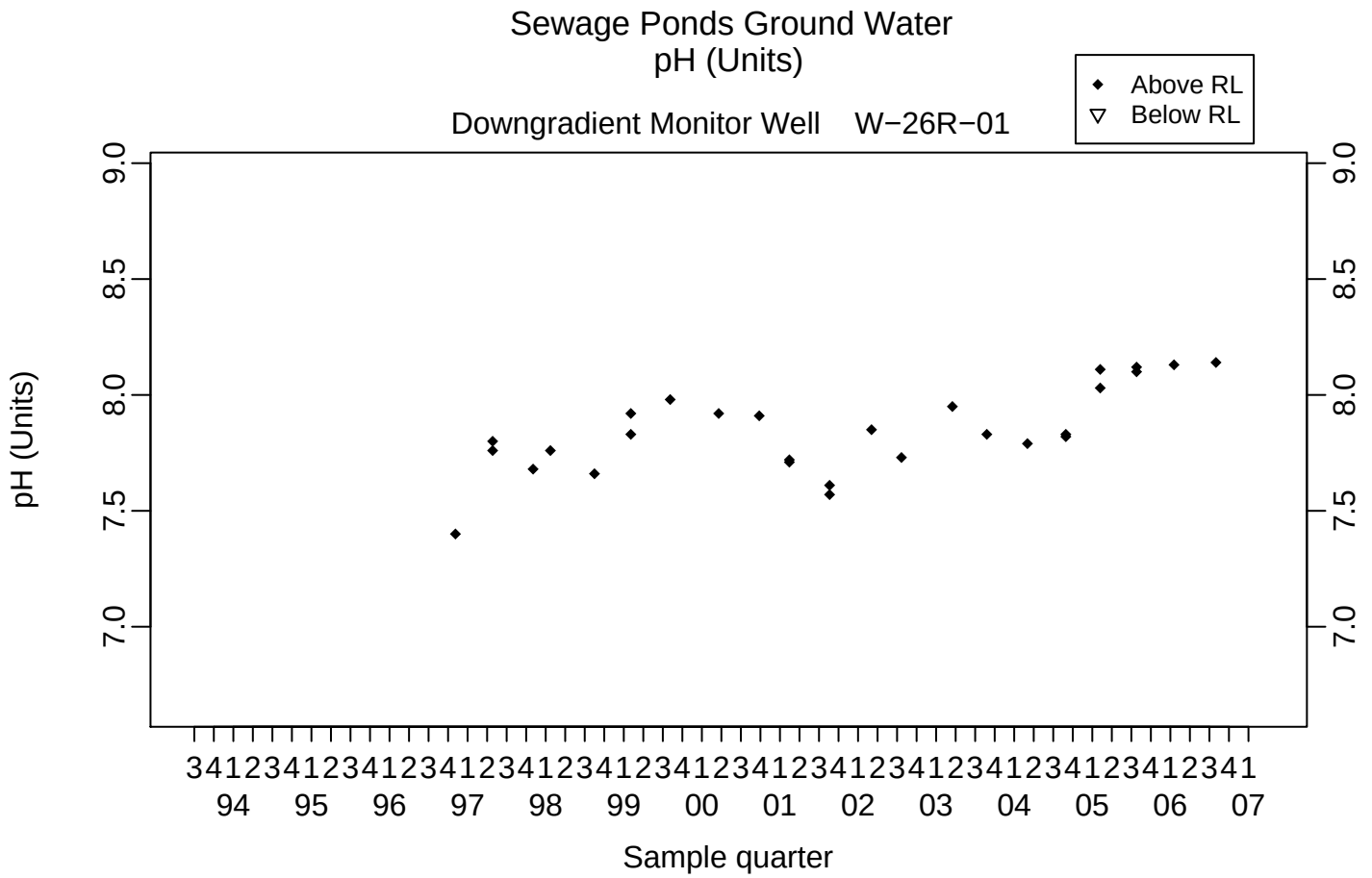

Upgradient Monitor Well W−7ES
pH (Units)
9.0
8.5
8.0
7.5
7.0
6.5
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

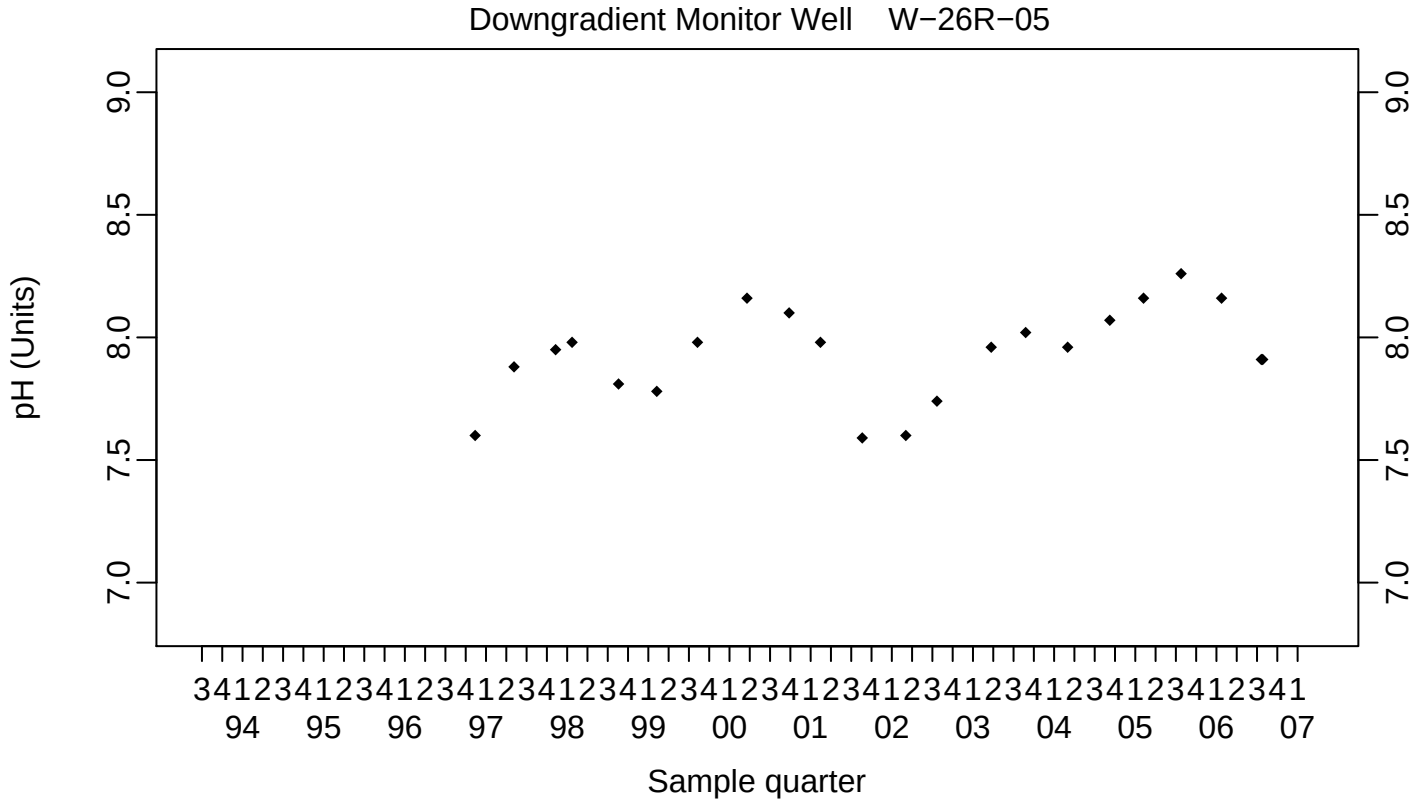

Sewage Ponds Ground Water
pH (Units)
Above RL
Below RL
Upgradient Monitor Well W−7PS
pH (Units)
Sample quarter

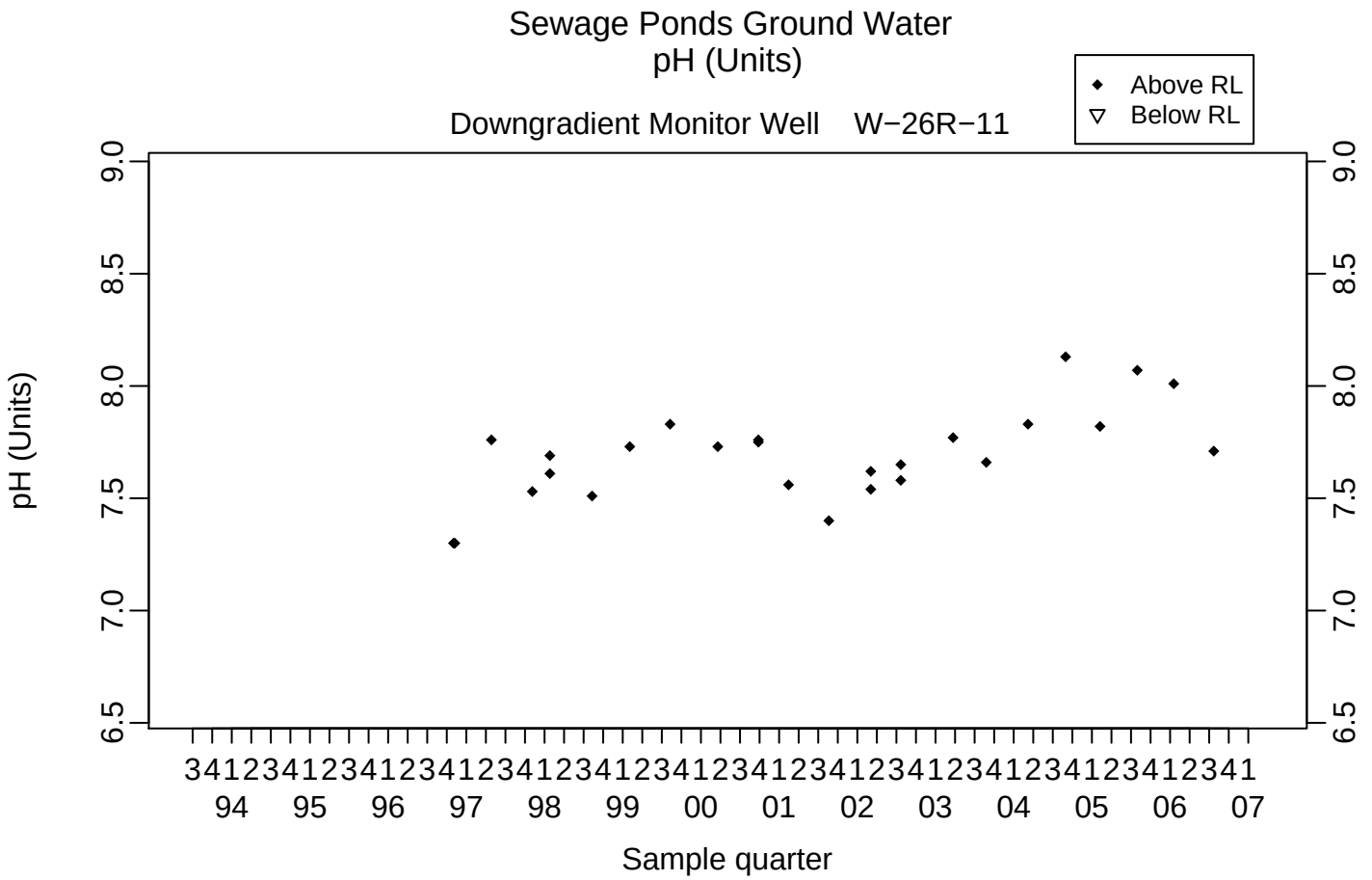

Crossgradient Monitor Well W−35A−04
pH (Units)
Sample quarter

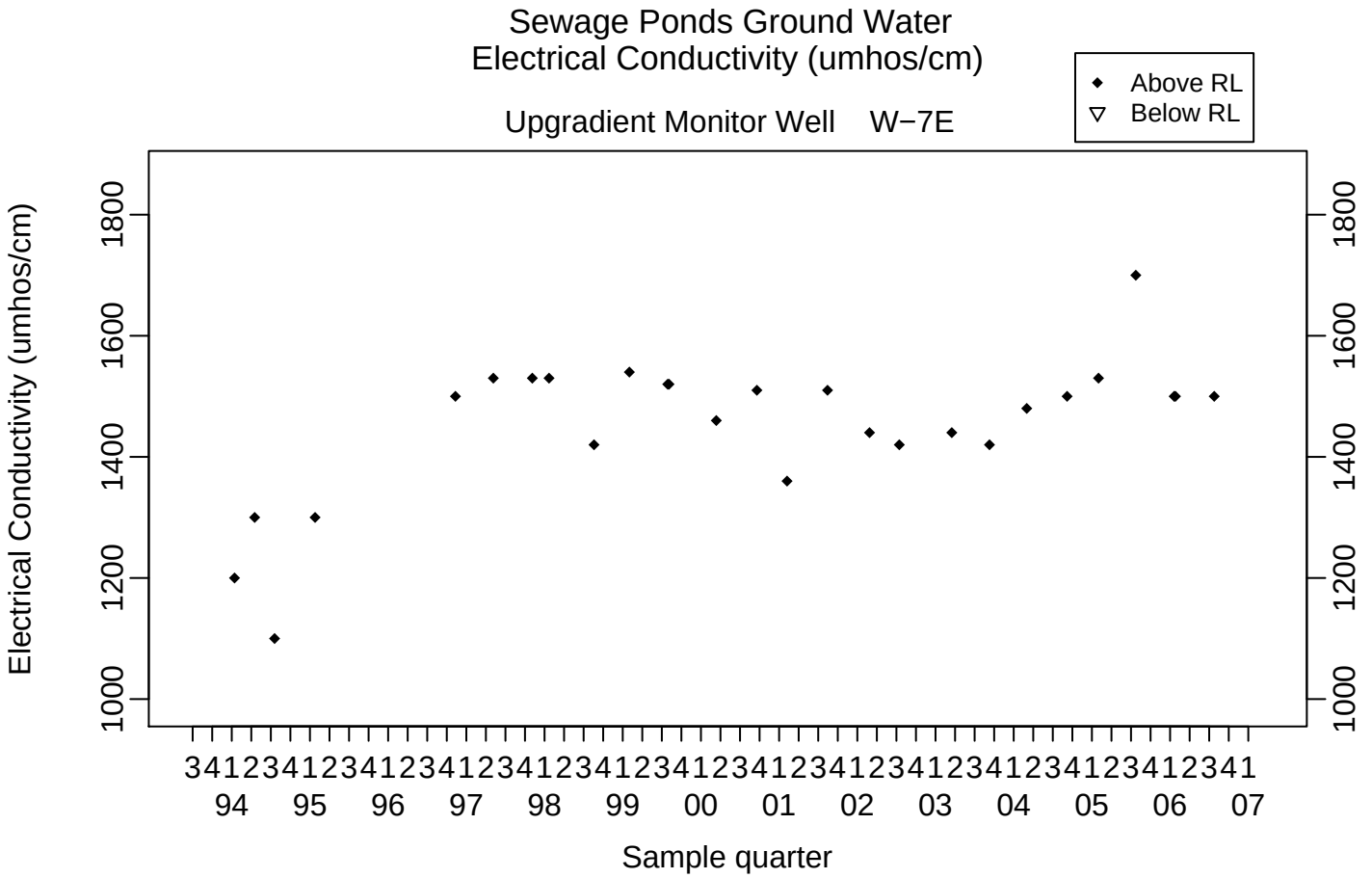

Sewage Ponds Ground Water
pH (Units)
Above RL
Below RL
Downgradient Monitor Well W−7DS
pH (Units)
6.5
7.0
7.5
8.0
8.5
9.0
9.5
3412341234123412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

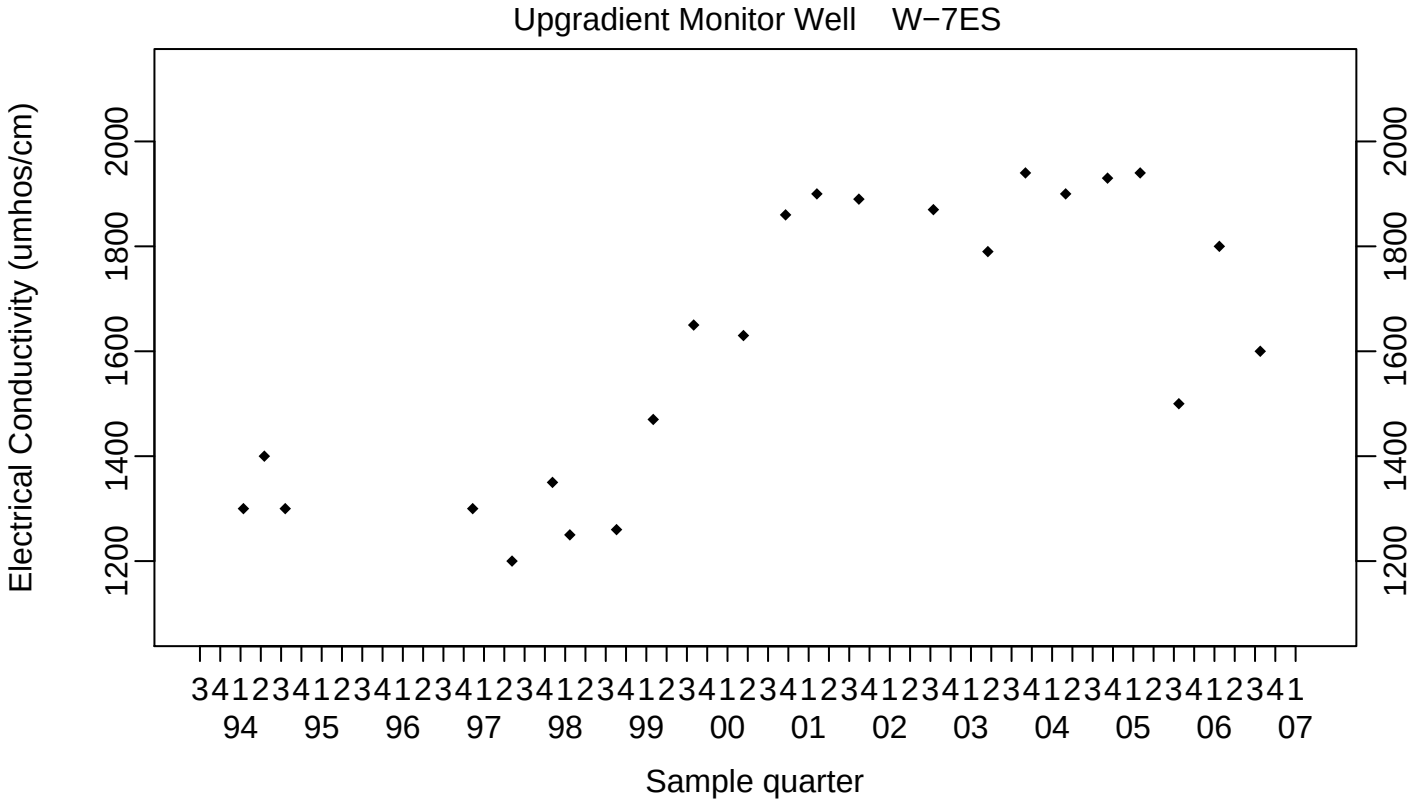

Downgradient Monitor Well W−25N−20
pH (Units)
6.5
7.0
7.5
8.0
8.5
9.0
3412341234123412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

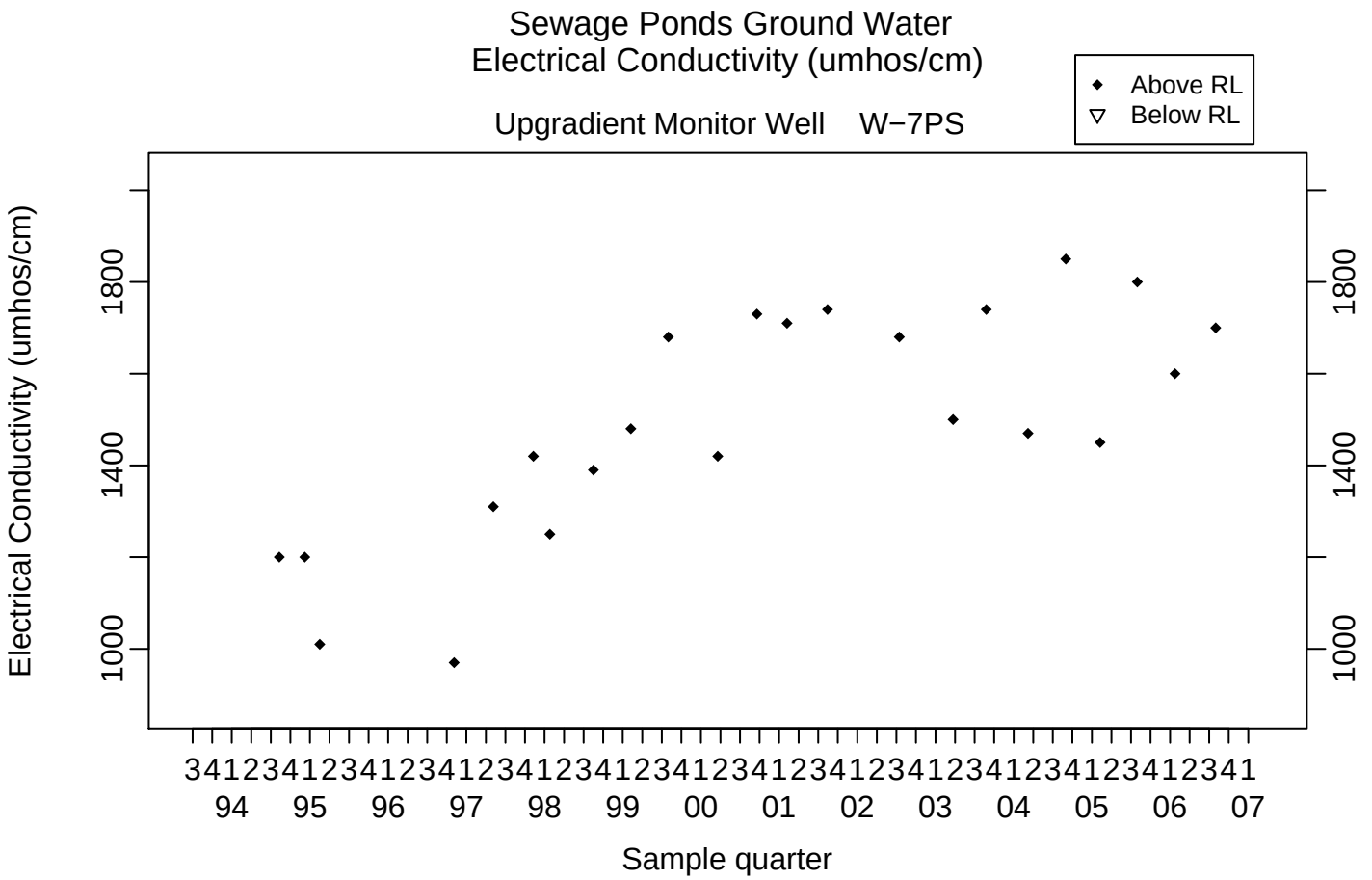

Sewage Ponds Ground Water
pH (Units)
Above RL
Below RL
Downgradient Monitor Well W−26R−01
pH (Units)
9.0
8.5
8.0
7.5
7.0
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

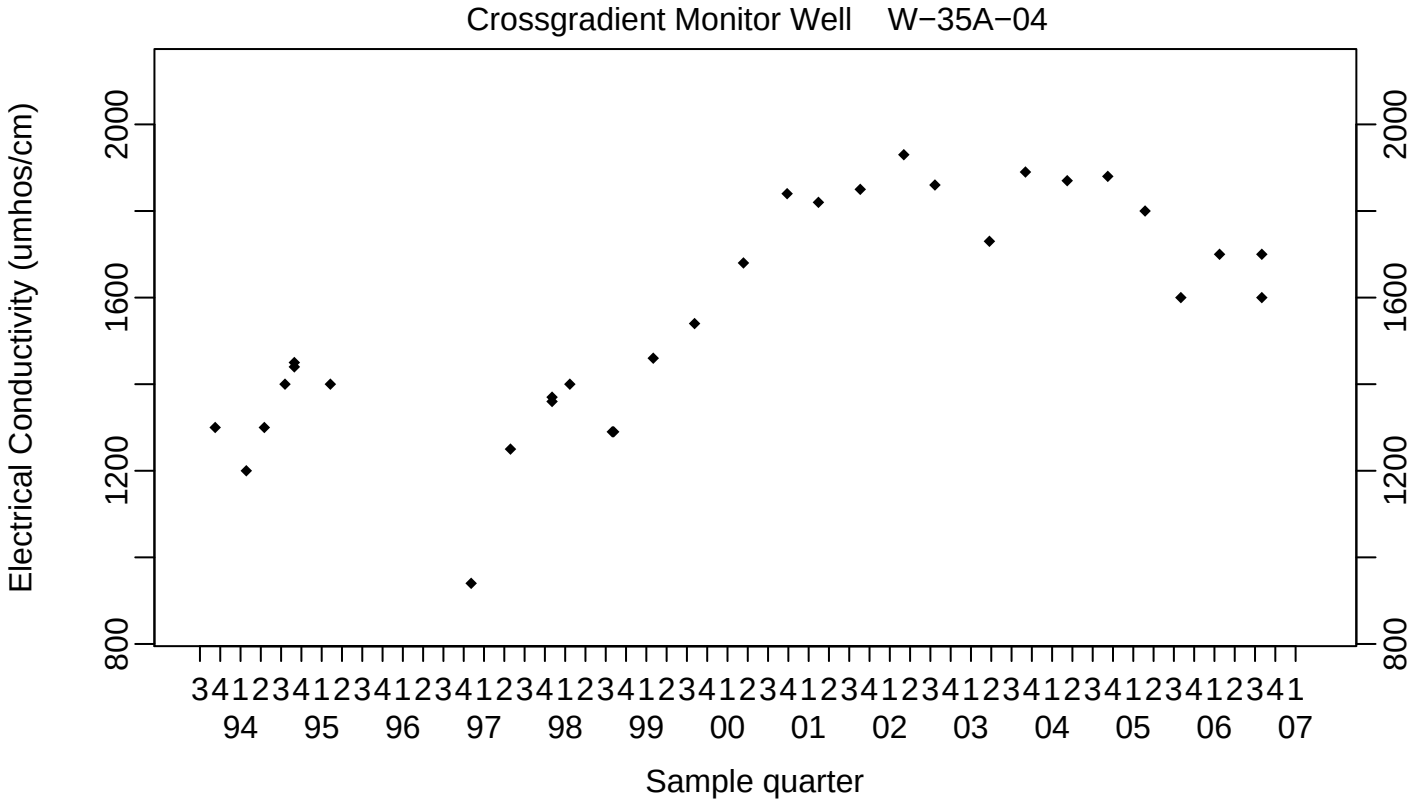

Downgradient Monitor Well W−26R−05
pH (Units)
9.0
8.5
8.0
7.5
7.0
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

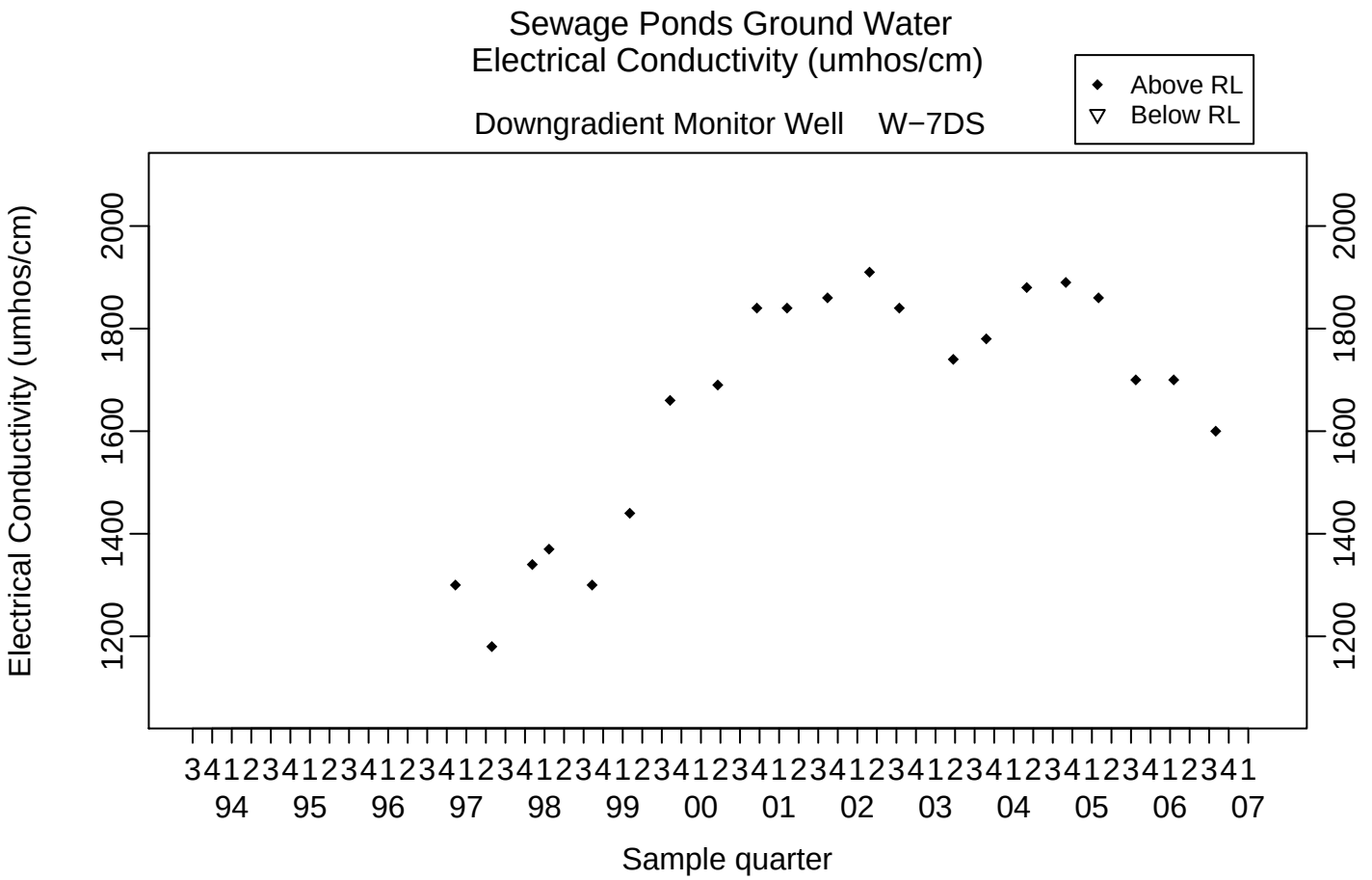

Sewage Ponds Ground Water
pH (Units)
Downgradient Monitor Well W−26R−11
Above RL
Below RL
pH (Units)
9.0
8.5
8.0
7.5
7.0
6.5
3412341234123412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

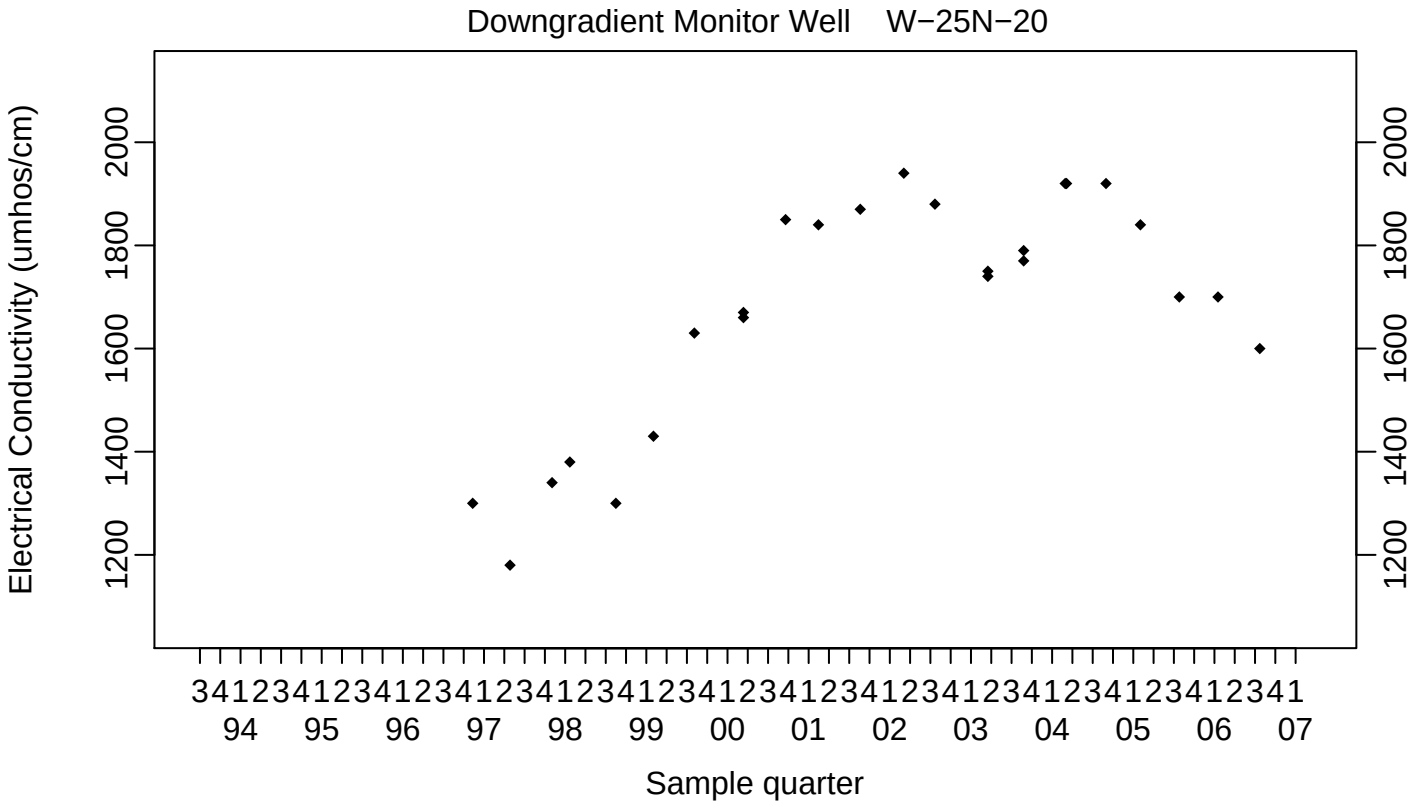

Sewage Ponds Ground Water
Electrical Conductivity (umhos/cm)
Above RL
Below RL
Upgradient Monitor Well W−7E
Electrical Conductivity (umhos/cm)
1000
1200
1400
1600
1800
Sample quarter
94 95 96 97 98 99 00 01 02 03 04 05 06 07

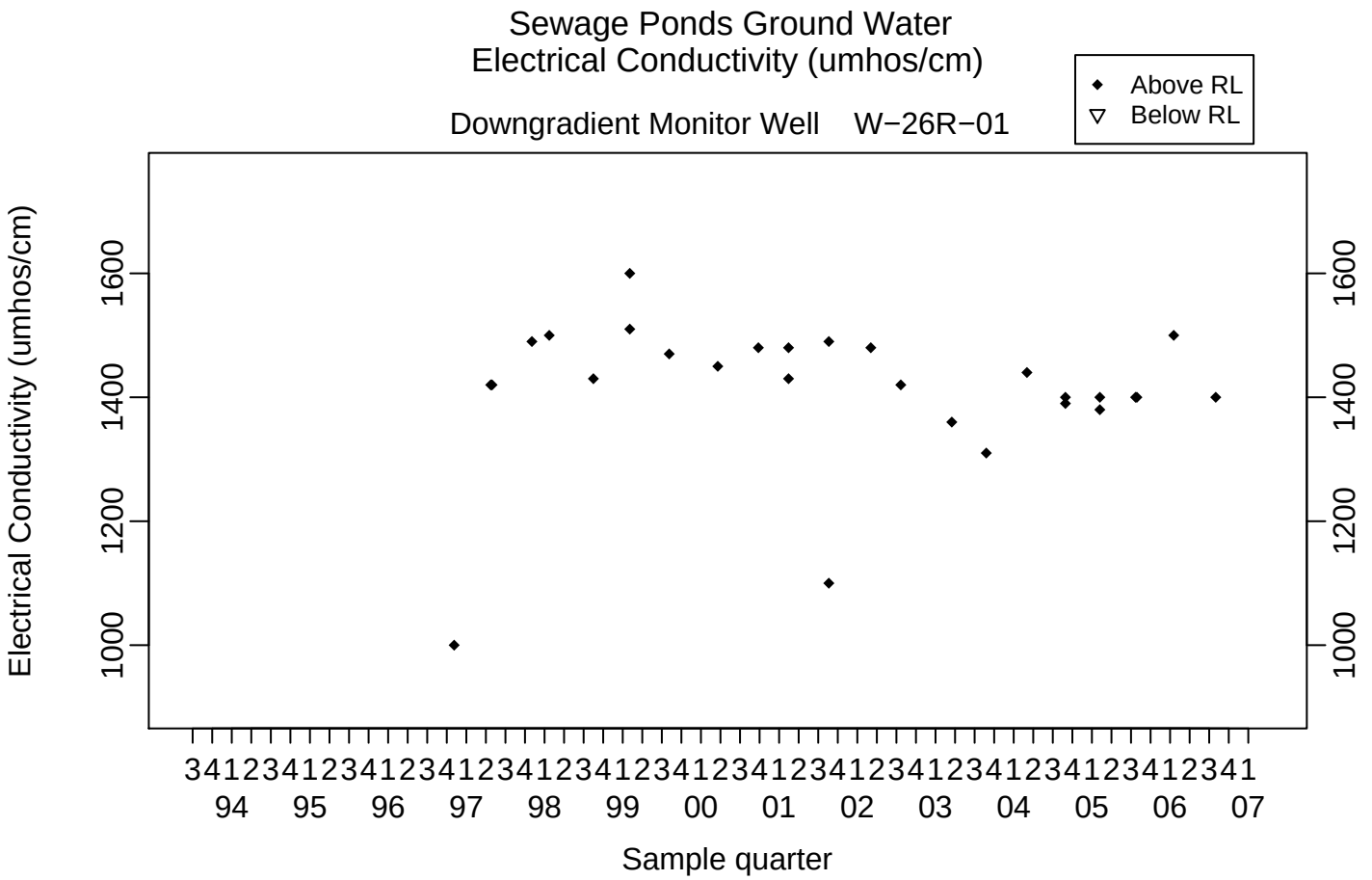

Upgradient Monitor Well W−7ES
Electrical Conductivity (umhos/cm)
1200
1400
1600
1800
2000
Sample quarter
94 95 96 97 98 99 00 01 02 03 04 05 06 07

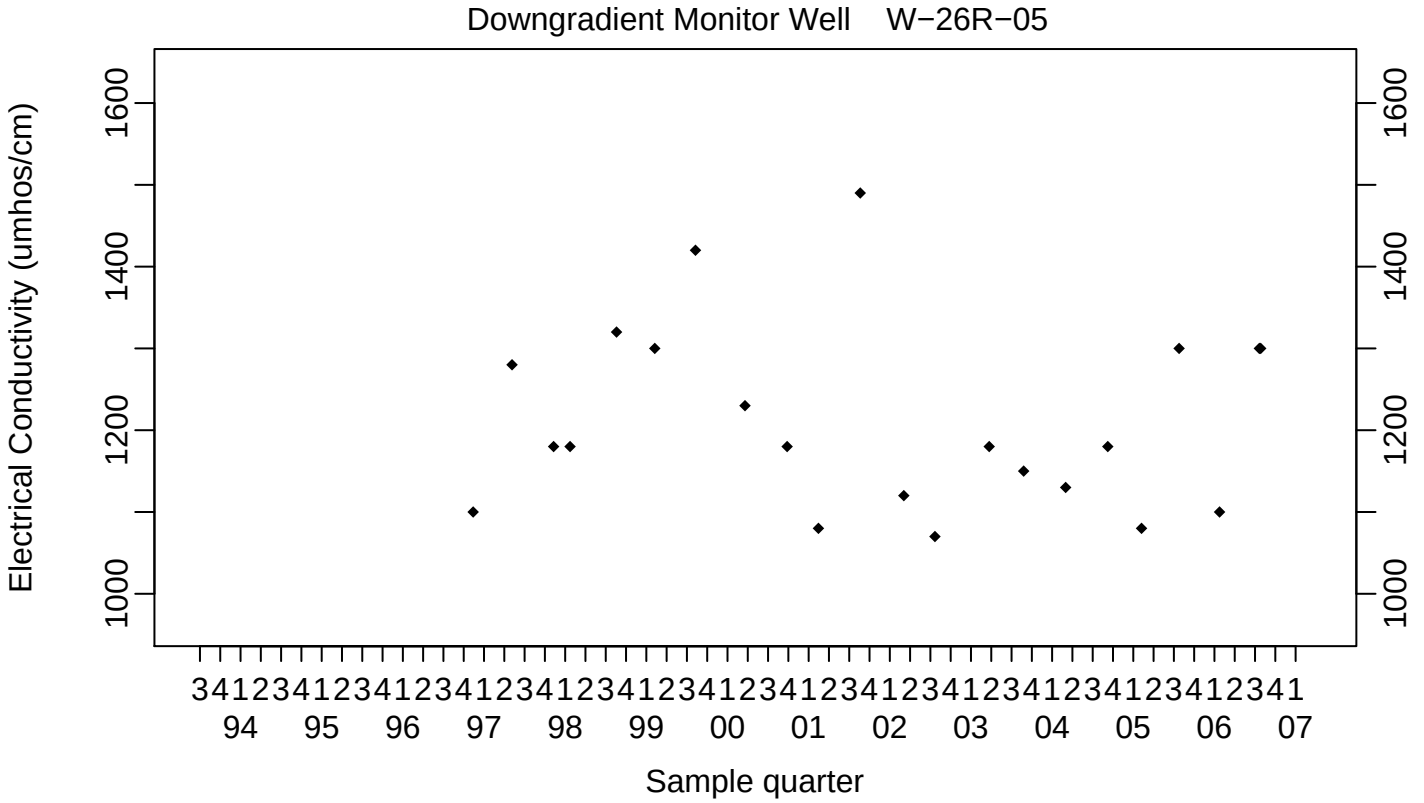

Sewage Ponds Ground Water
Electrical Conductivity (umhos/cm)
Above RL
Below RL
Upgradient Monitor Well W−7PS
Electrical Conductivity (umhos/cm)
1000
1400
1800
Sample quarter
94 95 96 97 98 99 00 01 02 03 04 05 06 07

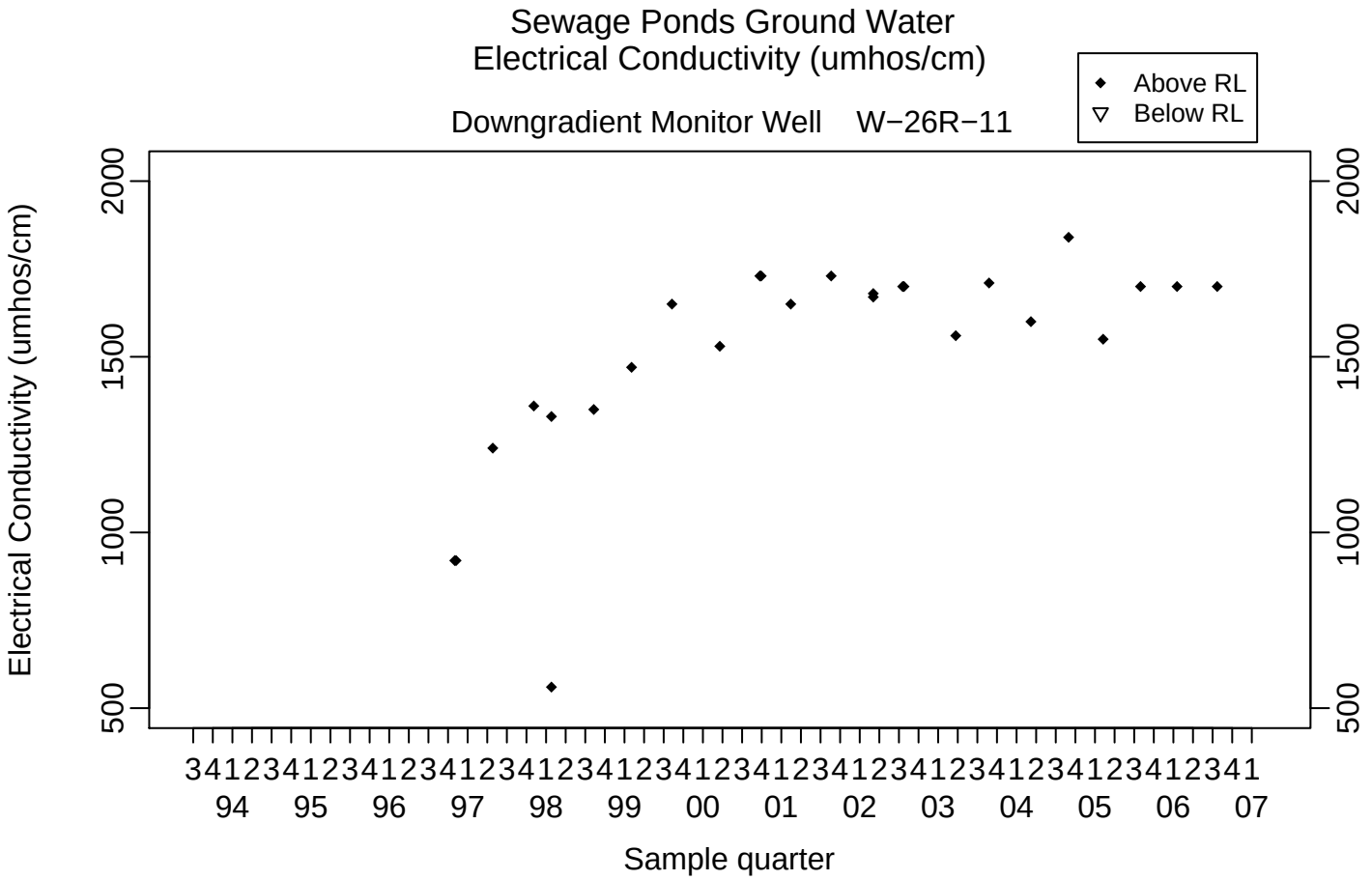

Crossgradient Monitor Well W−35A−04
Electrical Conductivity (umhos/cm)
800
1200
1600
2000
Sample quarter
94 95 96 97 98 99 00 01 02 03 04 05 06 07

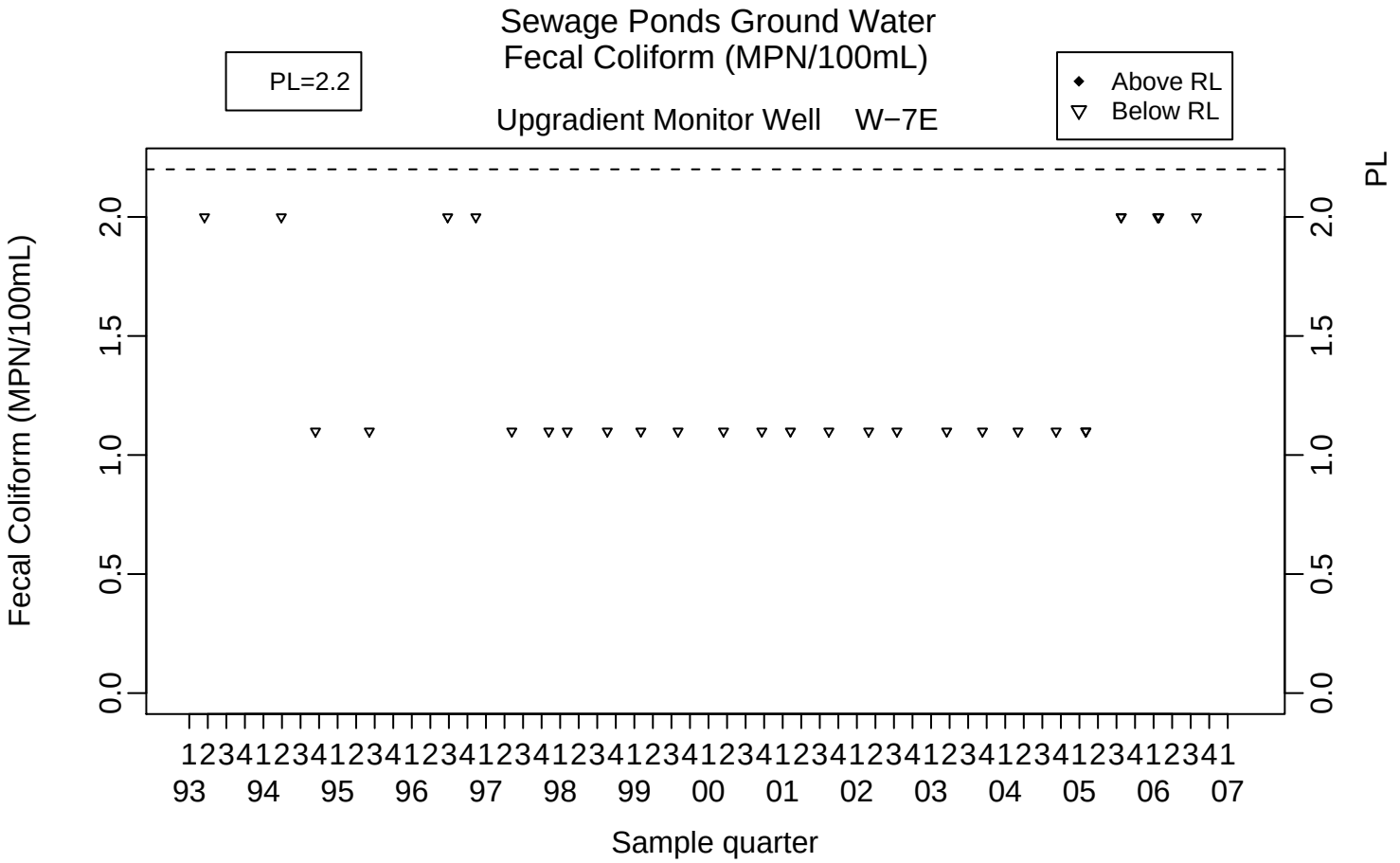

Sewage Ponds Ground Water
Electrical Conductivity (umhos/cm)
Above RL
Below RL
Downgradient Monitor Well W−7DS
Electrical Conductivity (umhos/cm)
1200
1400
1600
1800
2000
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

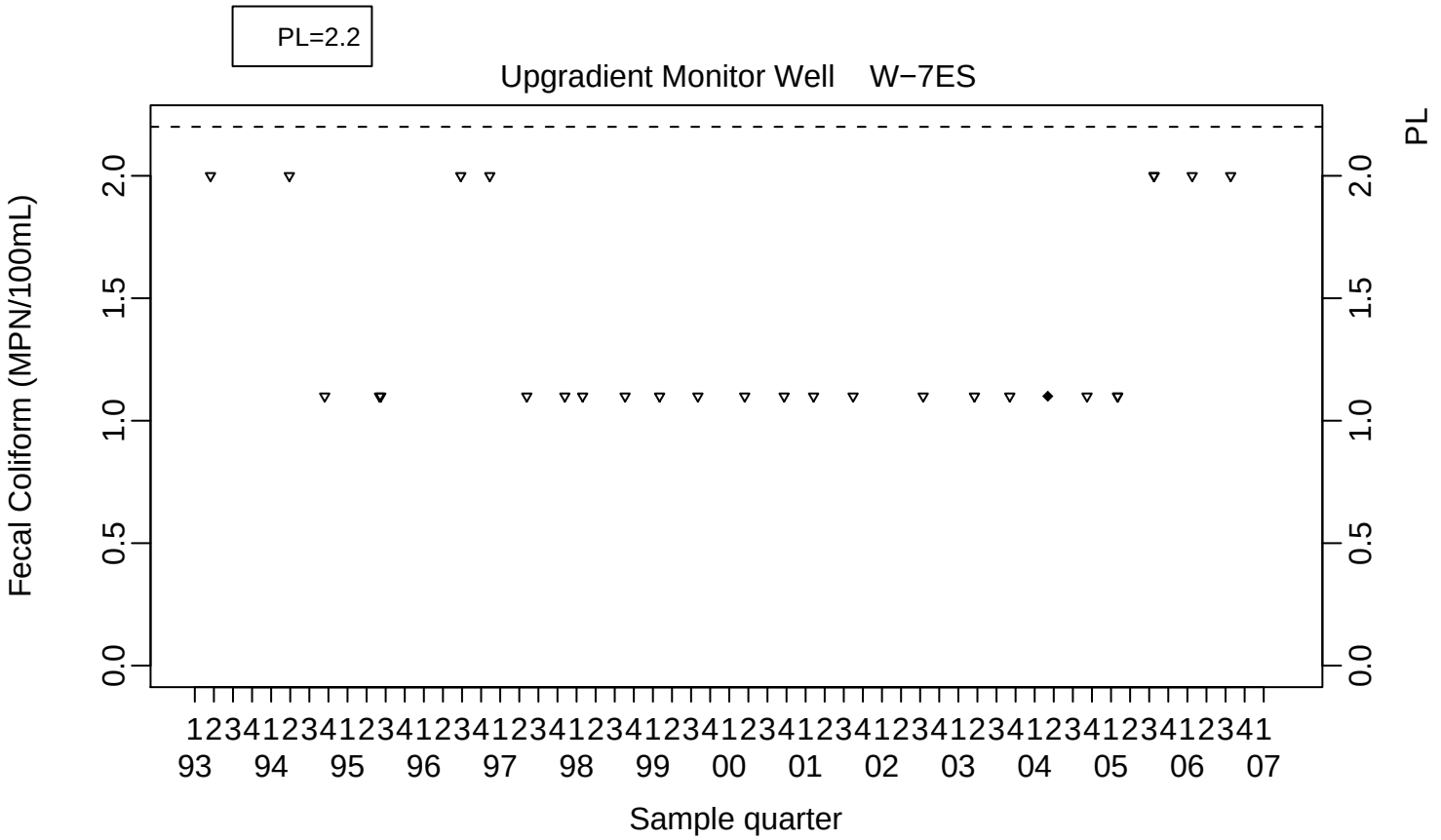

Downgradient Monitor Well W−25N−20
Electrical Conductivity (umhos/cm)
1200
1400
1600
1800
2000
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

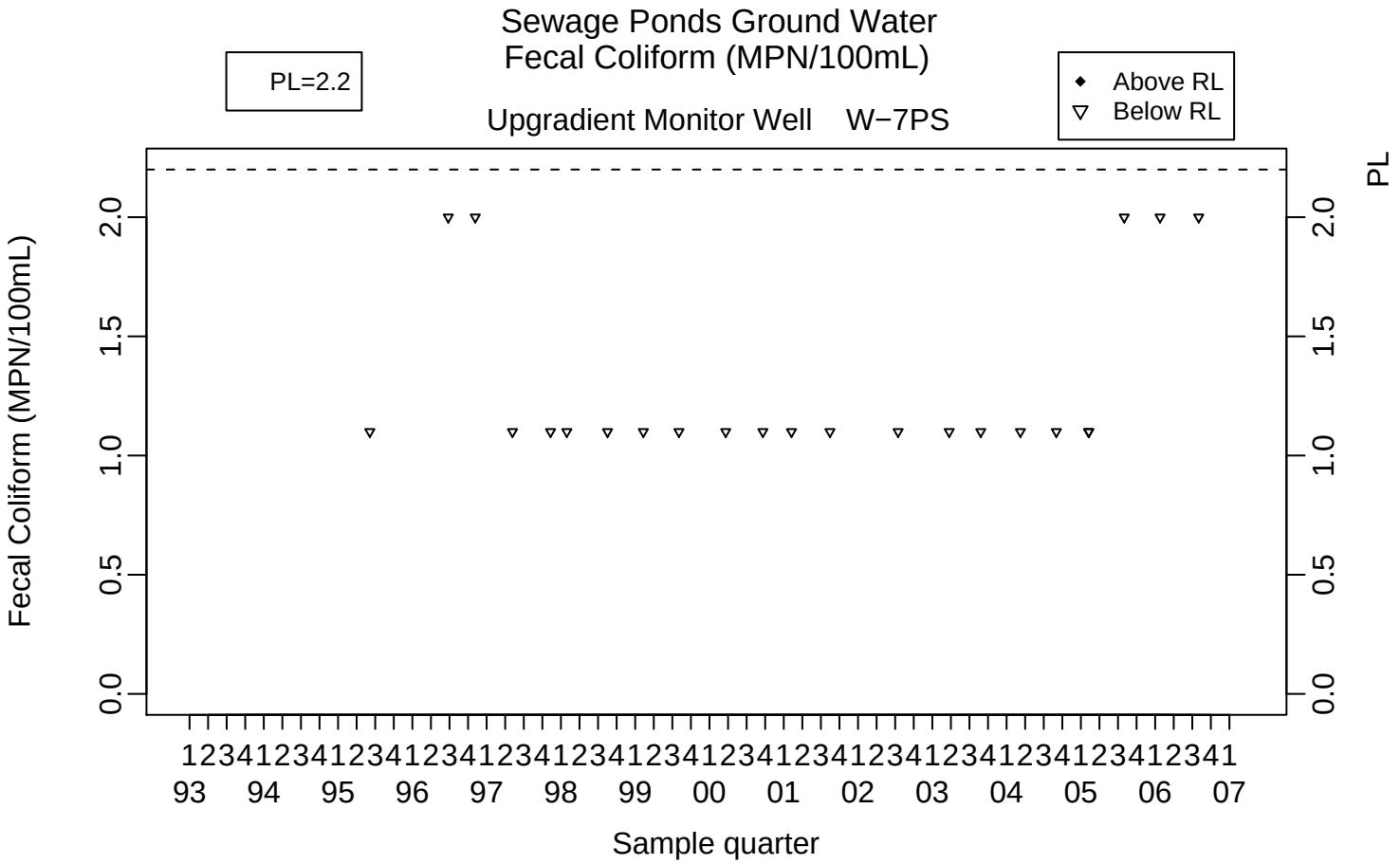

Sewage Ponds Ground Water
Electrical Conductivity (umhos/cm)
Above RL
Below RL
Downgradient Monitor Well W−26R−01
Electrical Conductivity (umhos/cm)
1000
1200
1400
1600
Sample quarter
94 95 96 97 98 99 00 01 02 03 04 05 06 07

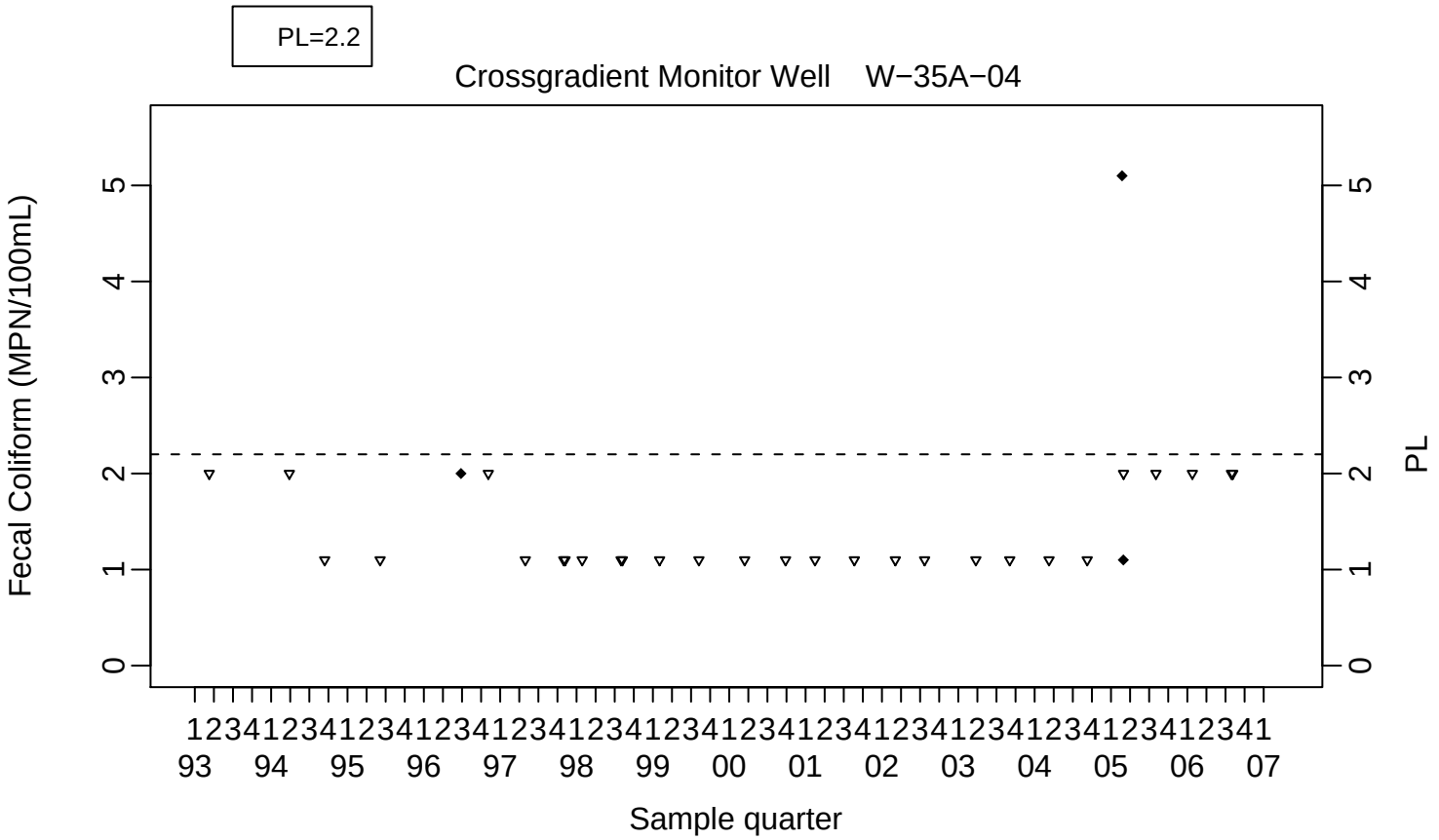

Downgradient Monitor Well W−26R−05
Electrical Conductivity (umhos/cm)
1000
1200
1400
1600
Sample quarter
94 95 96 97 98 99 00 01 02 03 04 05 06 07

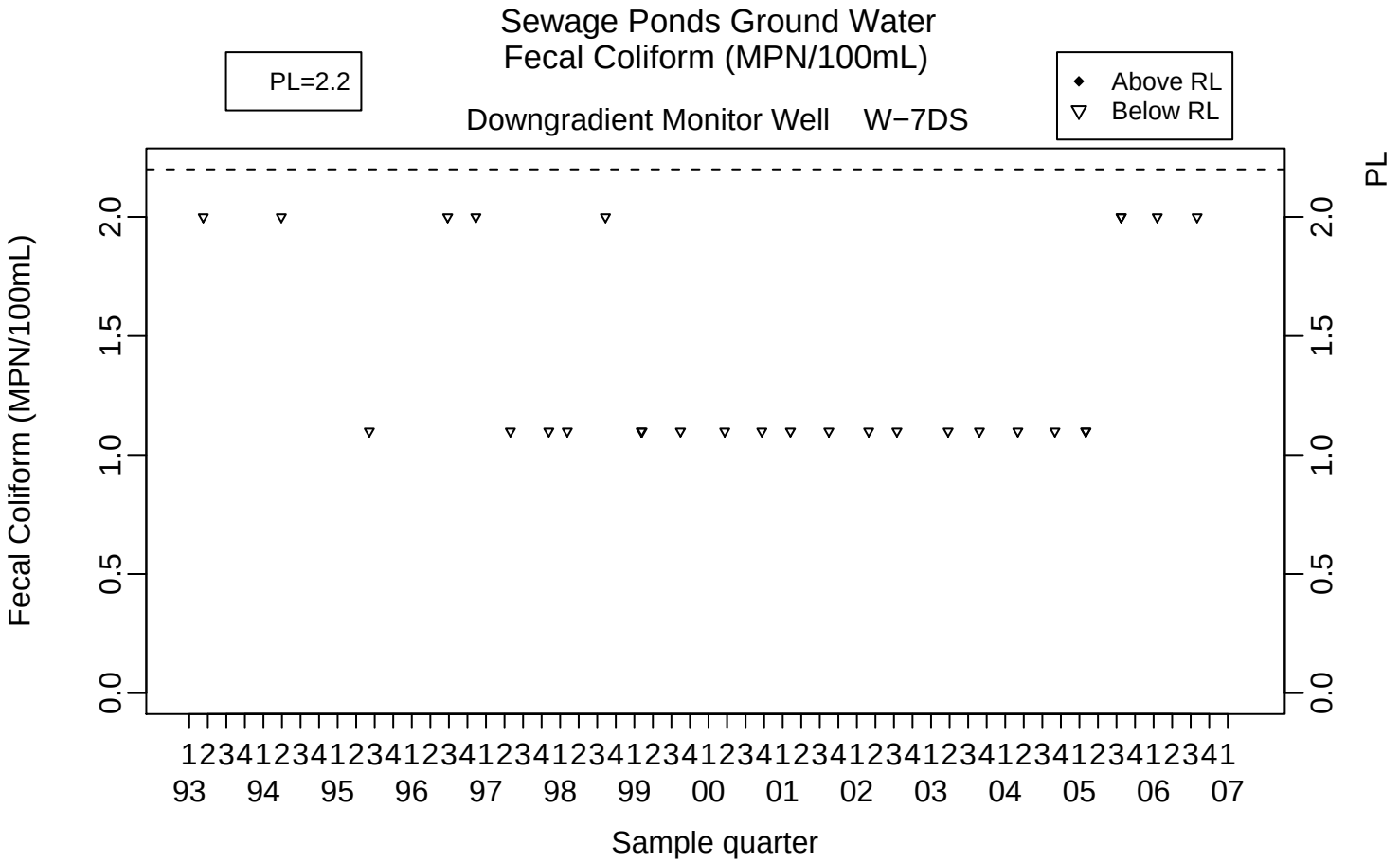

Sewage Ponds Ground Water
Electrical Conductivity (umhos/cm)
Downgradient Monitor Well W−26R−11
Above RL
Below RL
Electrical Conductivity (umhos/cm)
500
1000
1500
2000
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

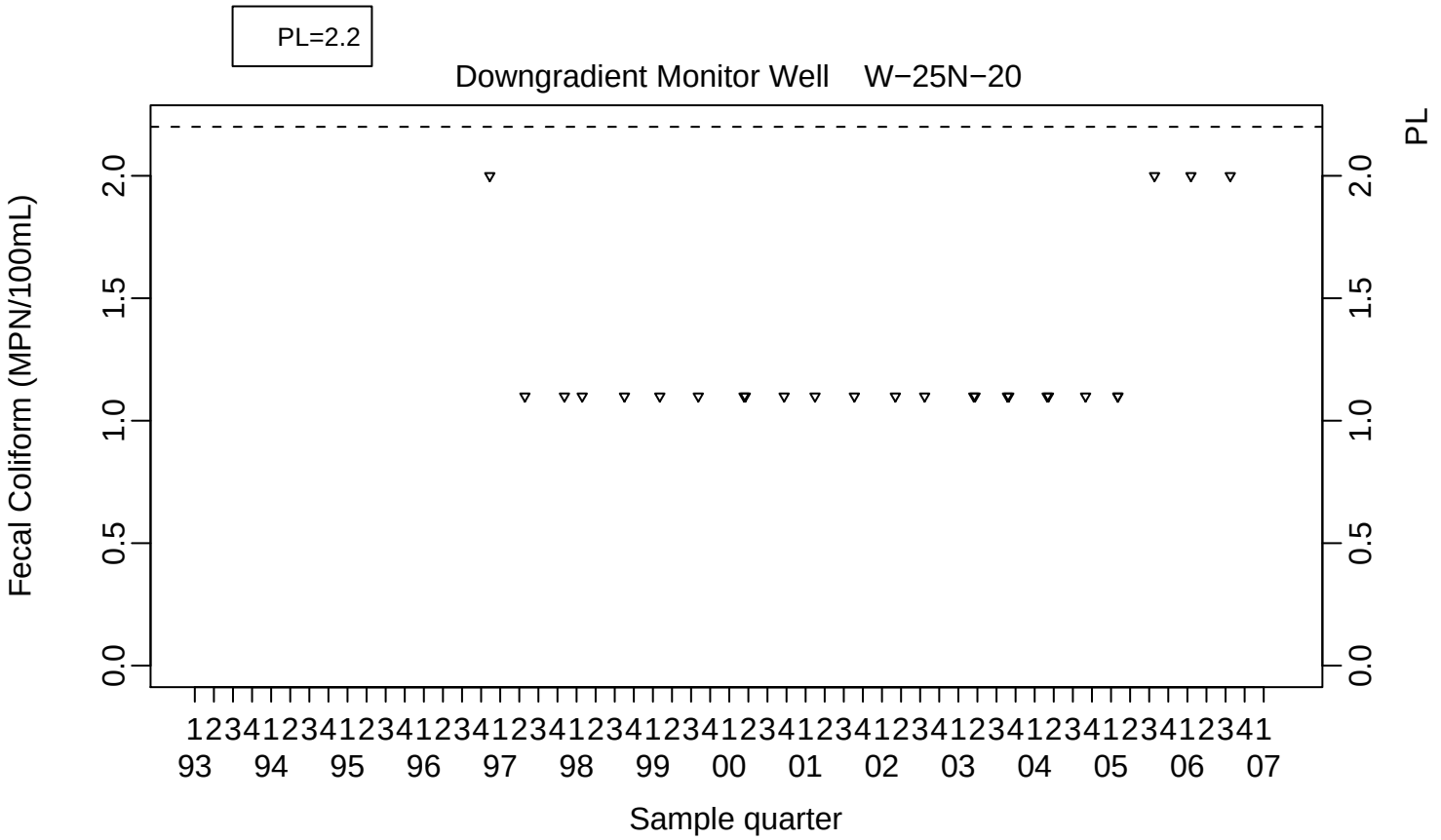

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Upgradient Monitor Well W−7E
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

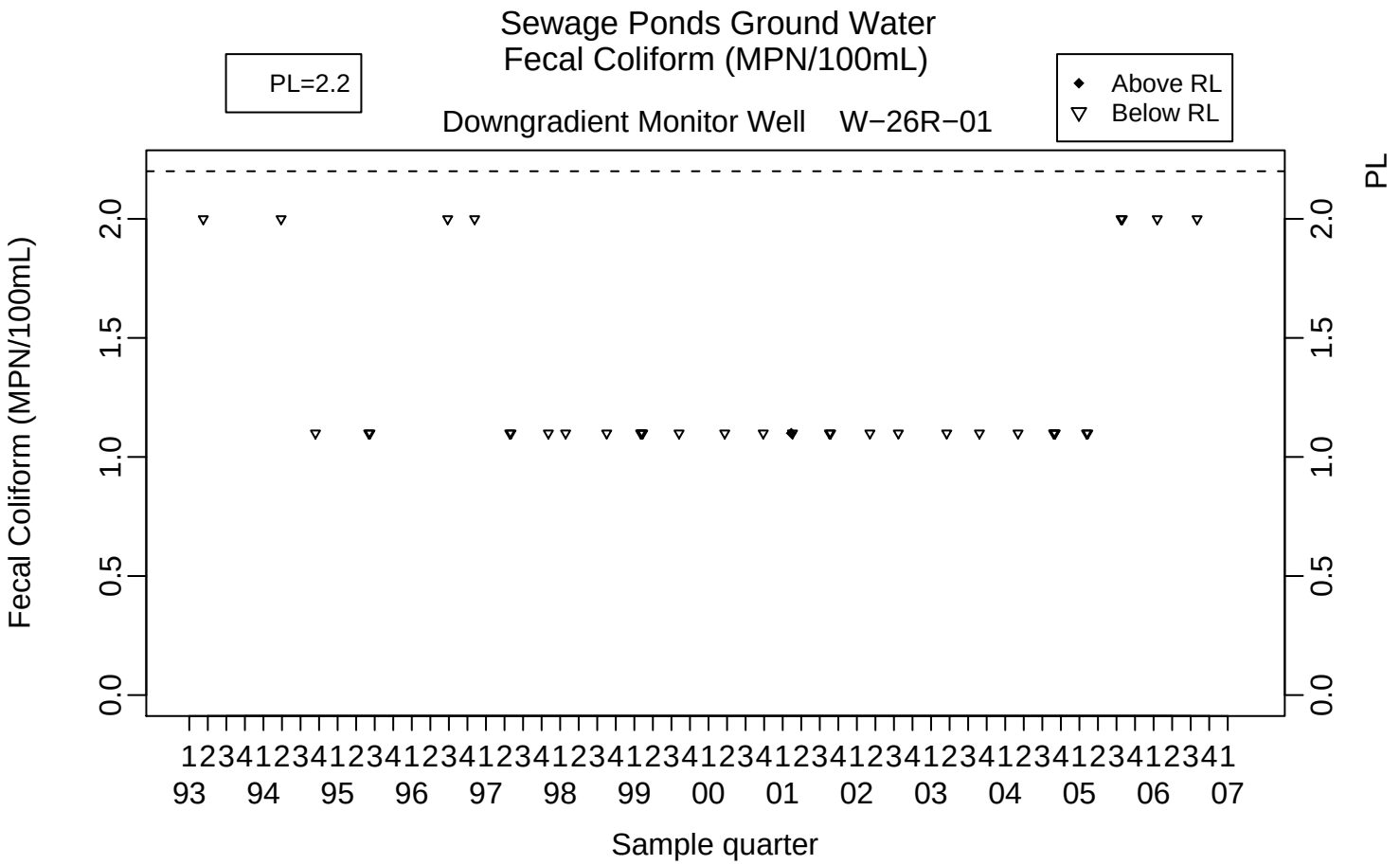

PL=2.2
Upgradient Monitor Well W−7ES
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

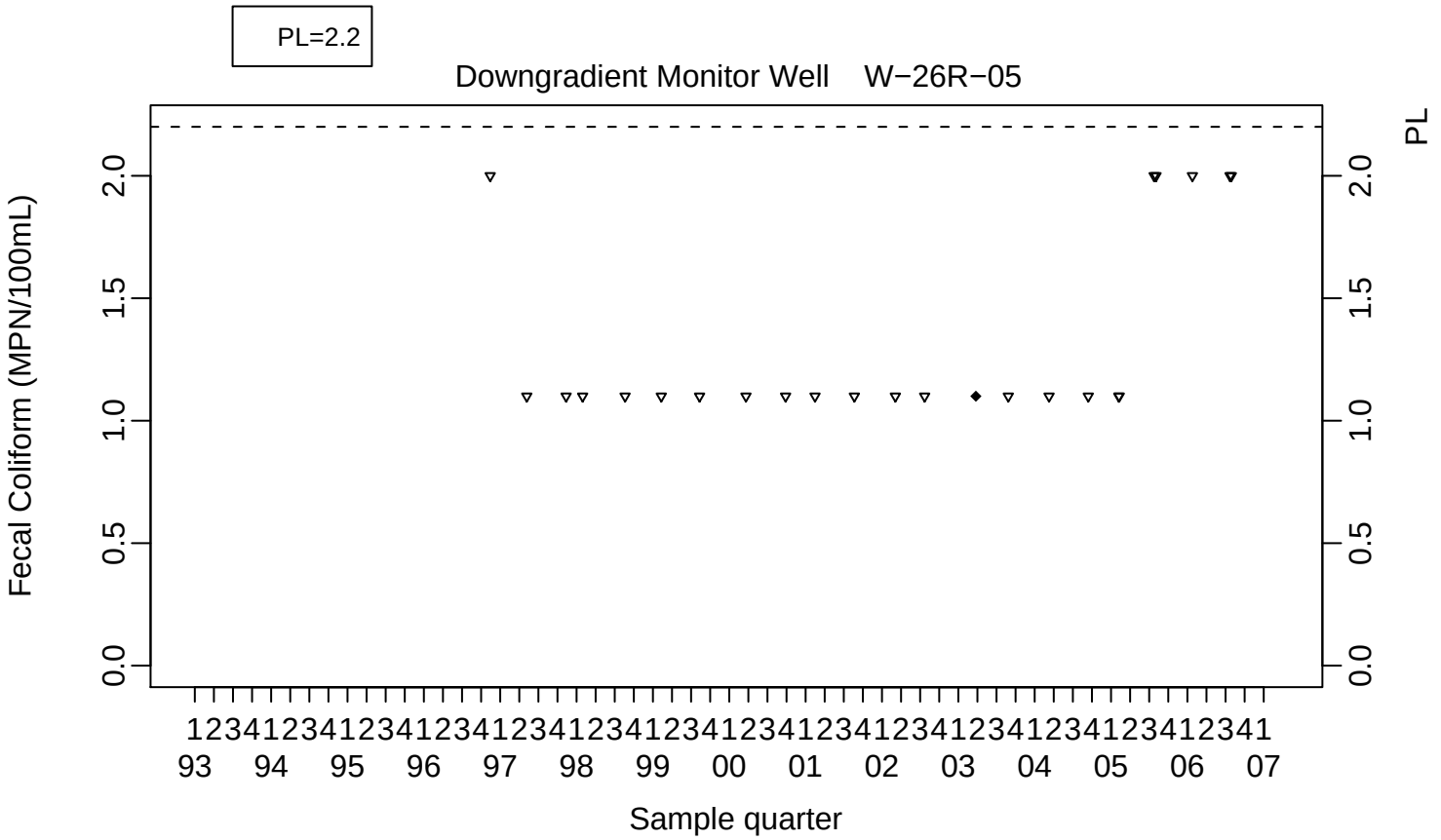

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Upgradient Monitor Well W−7PS
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

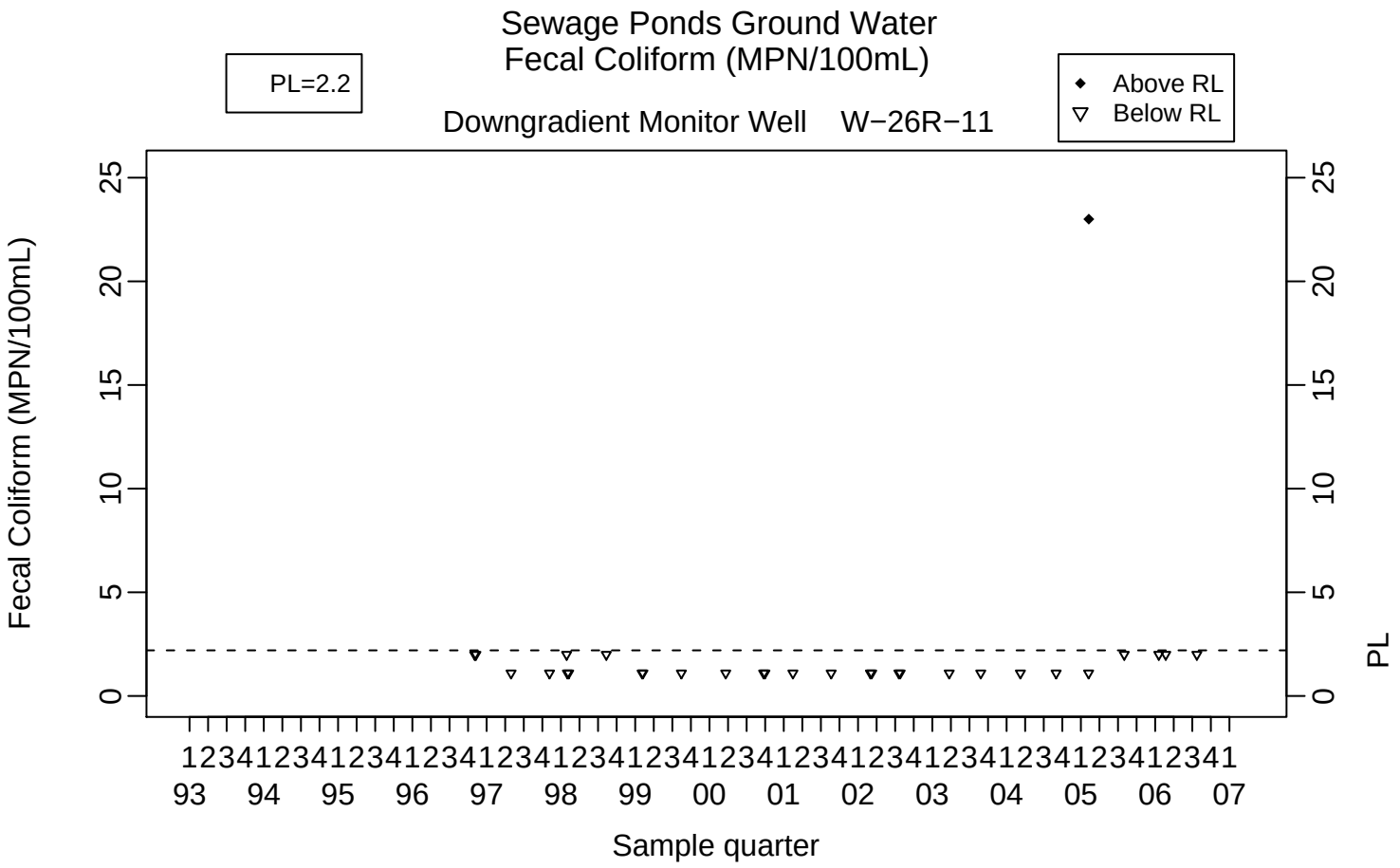

PL=2.2
Crossgradient Monitor Well W−35A−04
Fecal Coliform (MPN/100mL)
PL
0
1
2
3
4
5
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Downgradient Monitor Well W−7DS
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

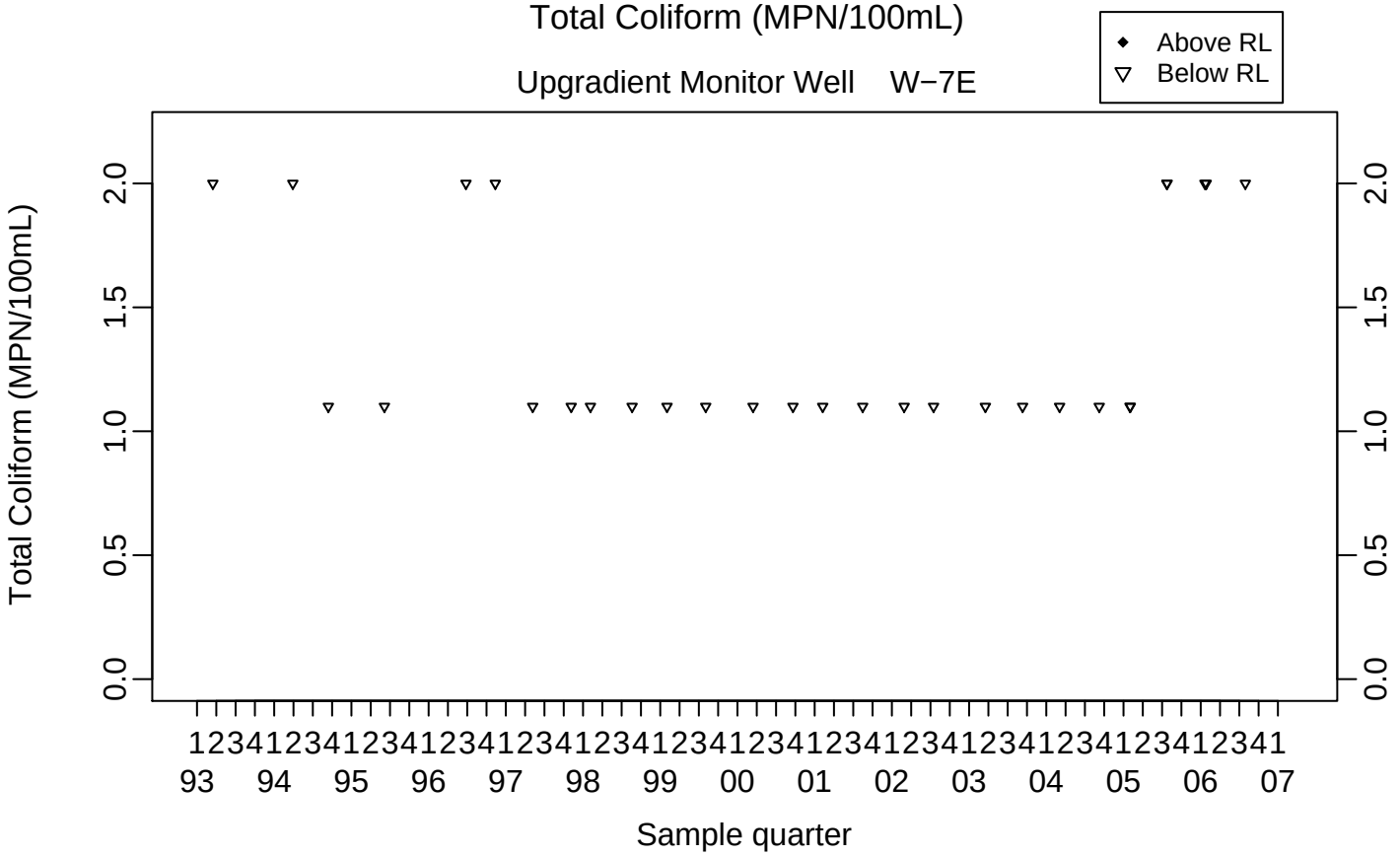

PL=2.2
Downgradient Monitor Well W−25N−20
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

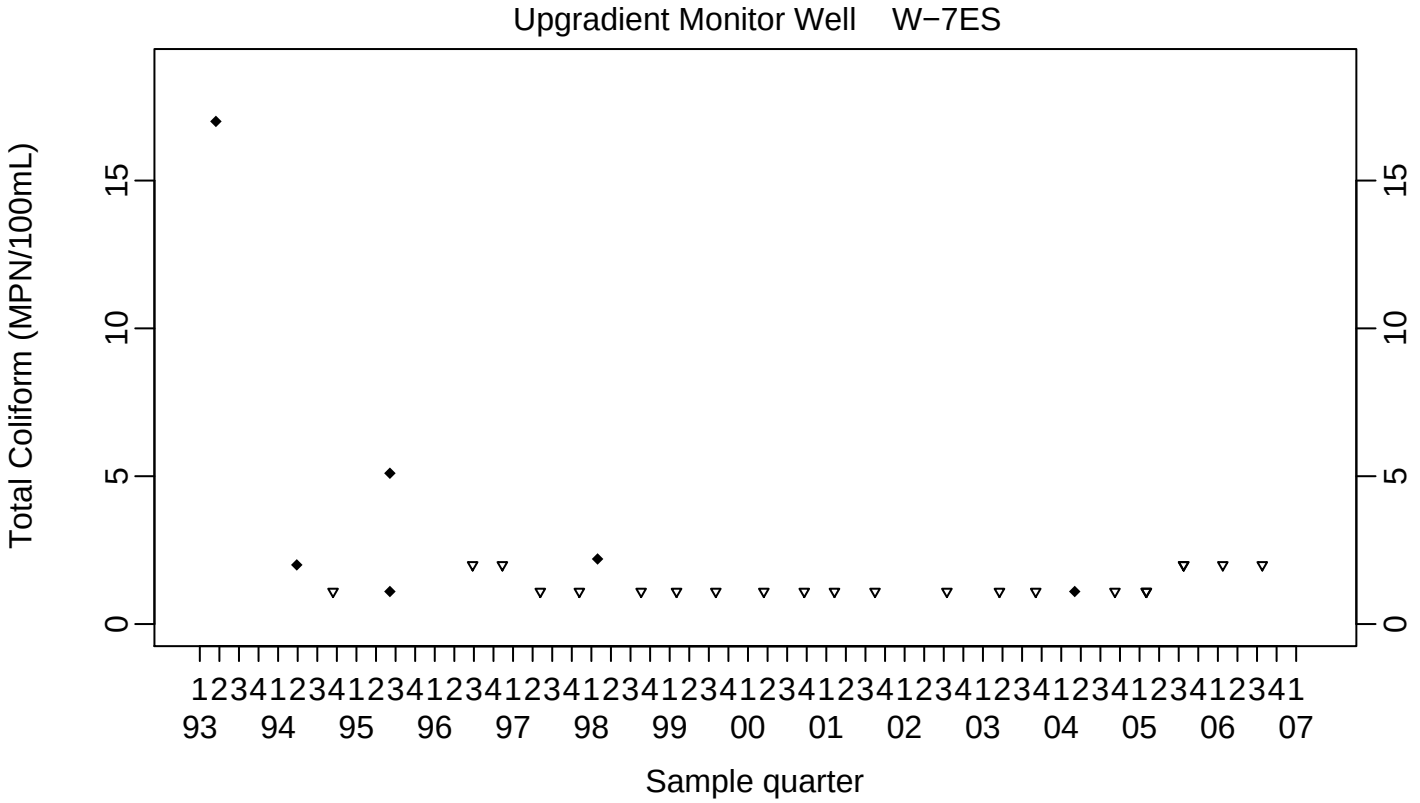

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
PL=2.2
Above RL
Below RL
Downgradient Monitor Well W−26R−01
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

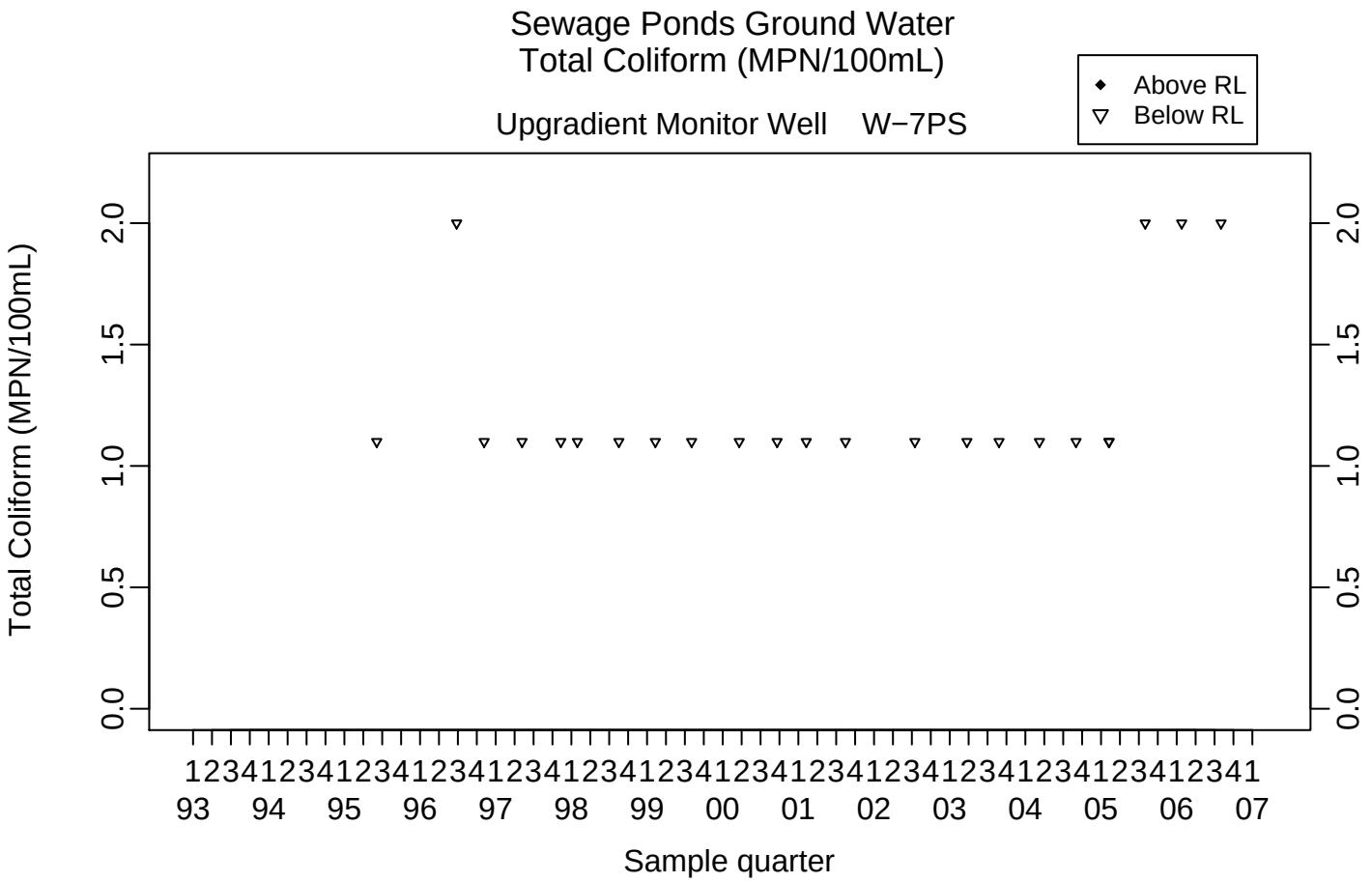

PL=2.2
Downgradient Monitor Well W−26R−05
Fecal Coliform (MPN/100mL)
PL
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

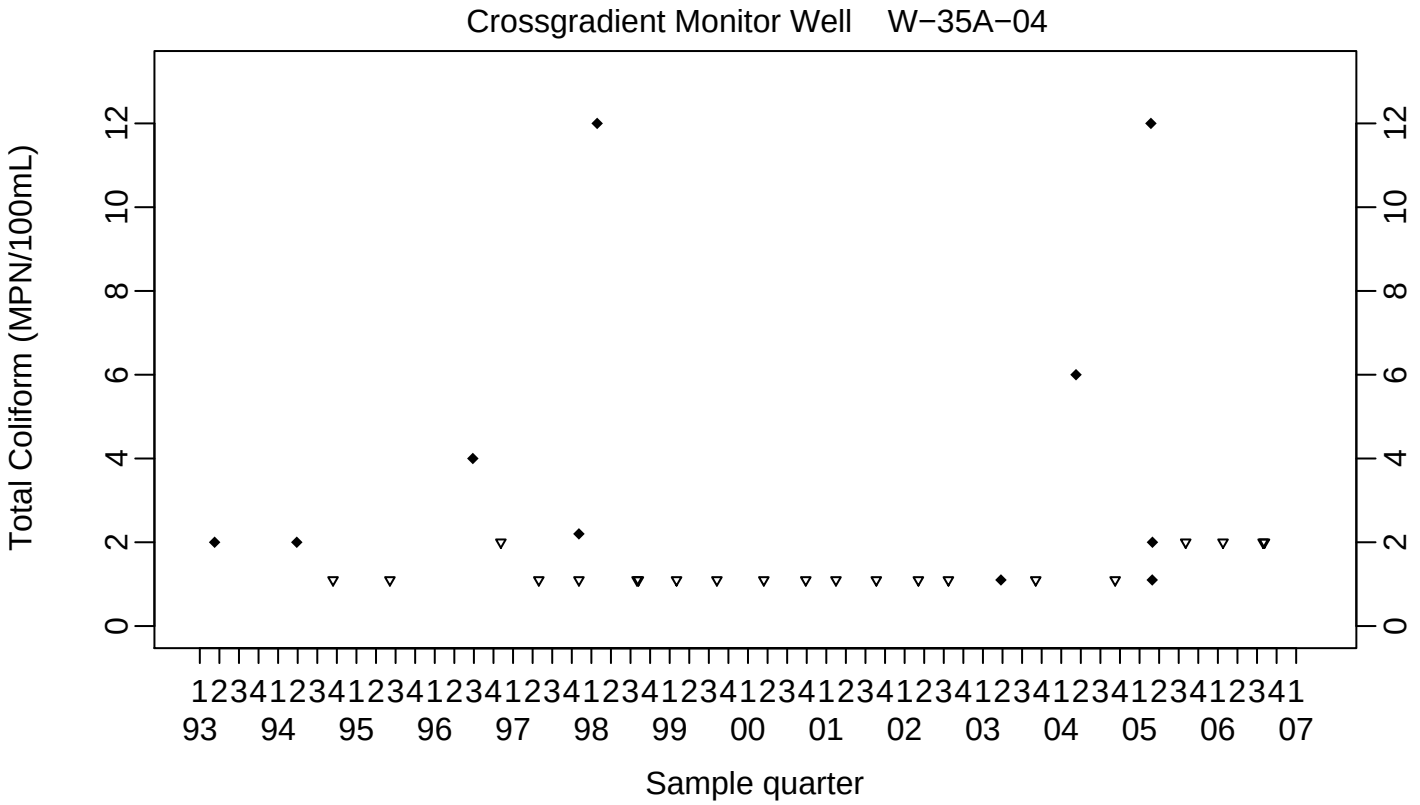

Sewage Ponds Ground Water
Fecal Coliform (MPN/100mL)
Downgradient Monitor Well W−26R−11
PL=2.2
Above RL
Below RL
Fecal Coliform (MPN/100mL)
PL
0
5
10
15
20
25
1234 93
1234 94
1234 95
1234 96
1234 97
1234 98
1234 99
1234 00
1234 01
1234 02
1234 03
1234 04
1234 05
1234 06
1234 07
Sample quarter

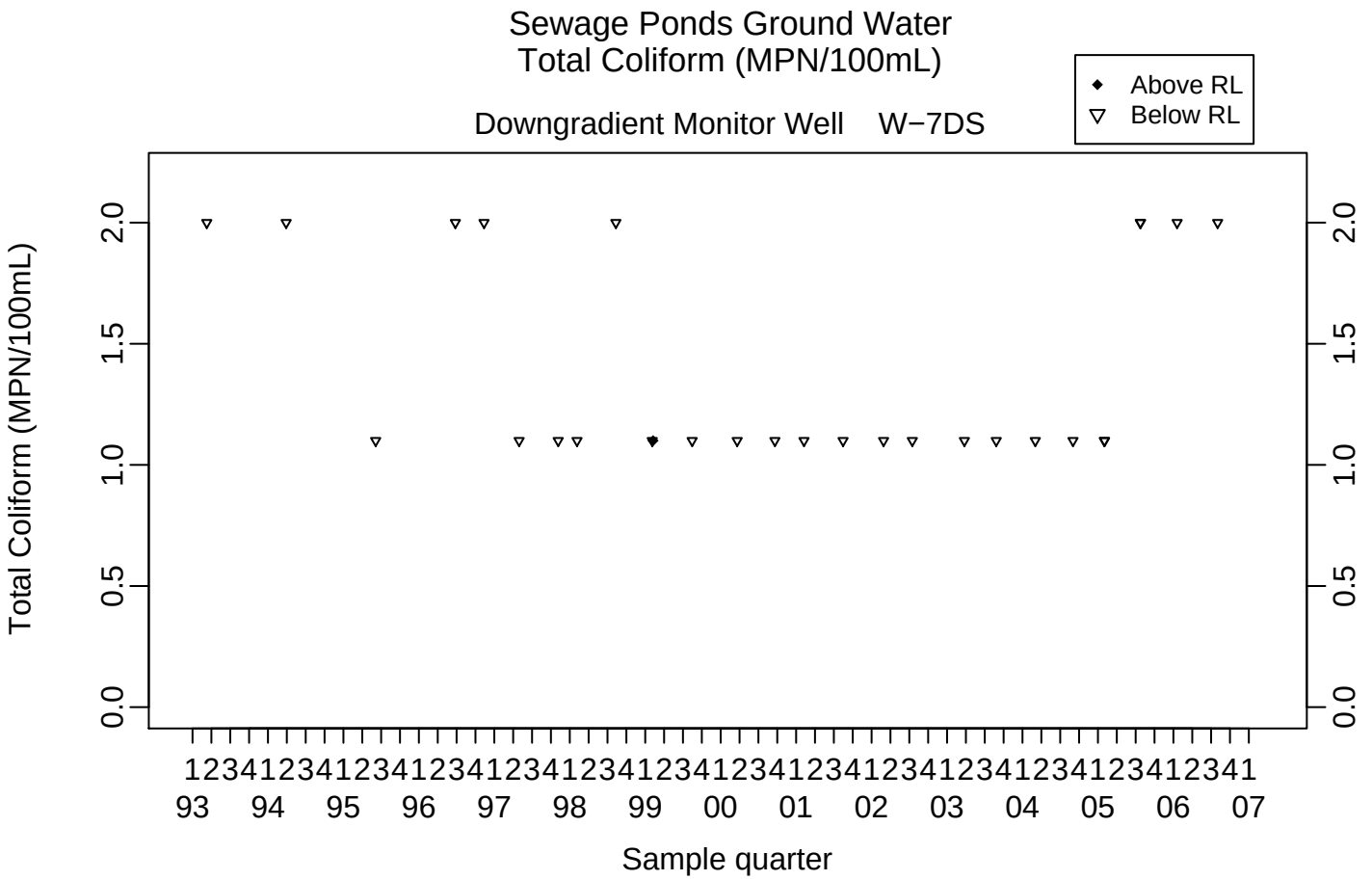
Sewage Ponds Ground Water
Total Coliform (MPN/100mL)

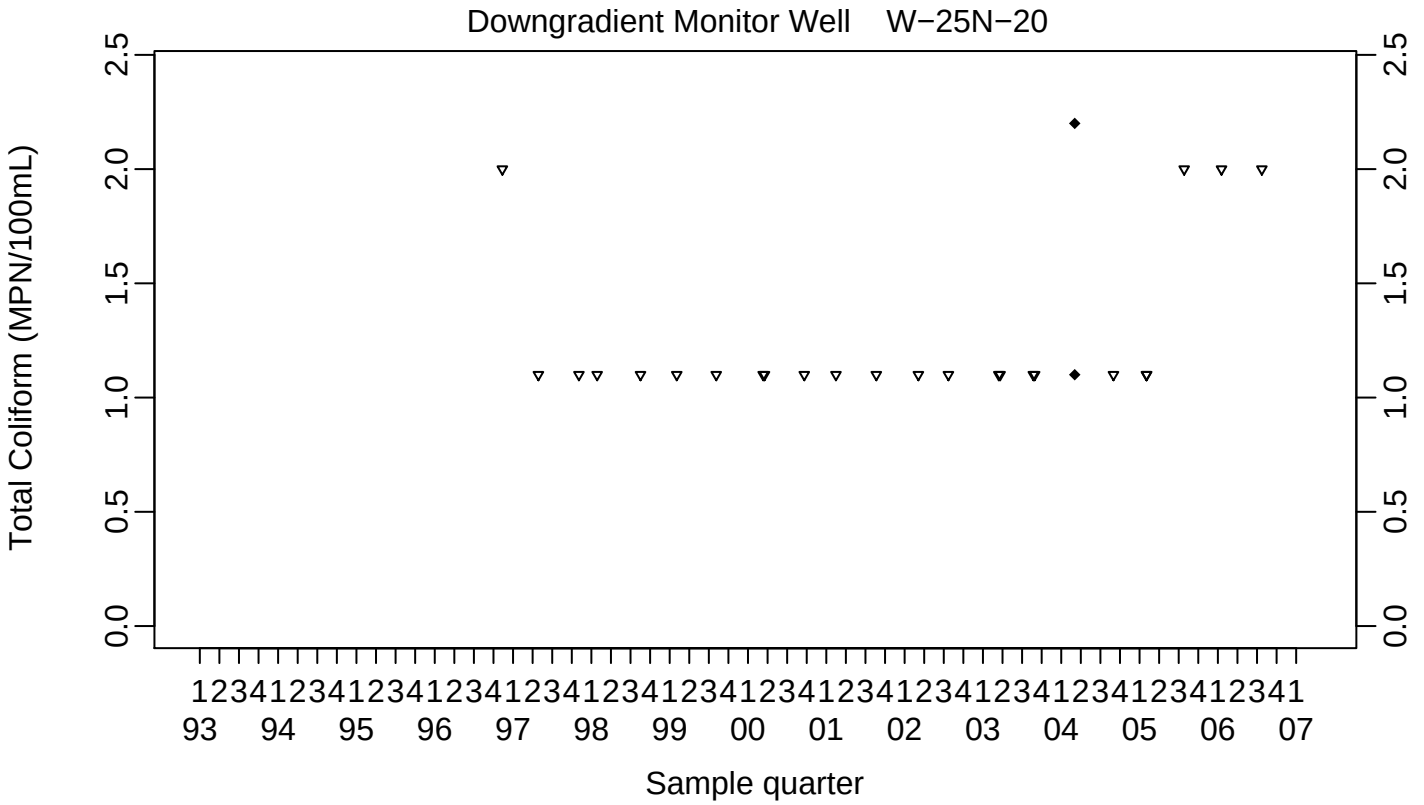


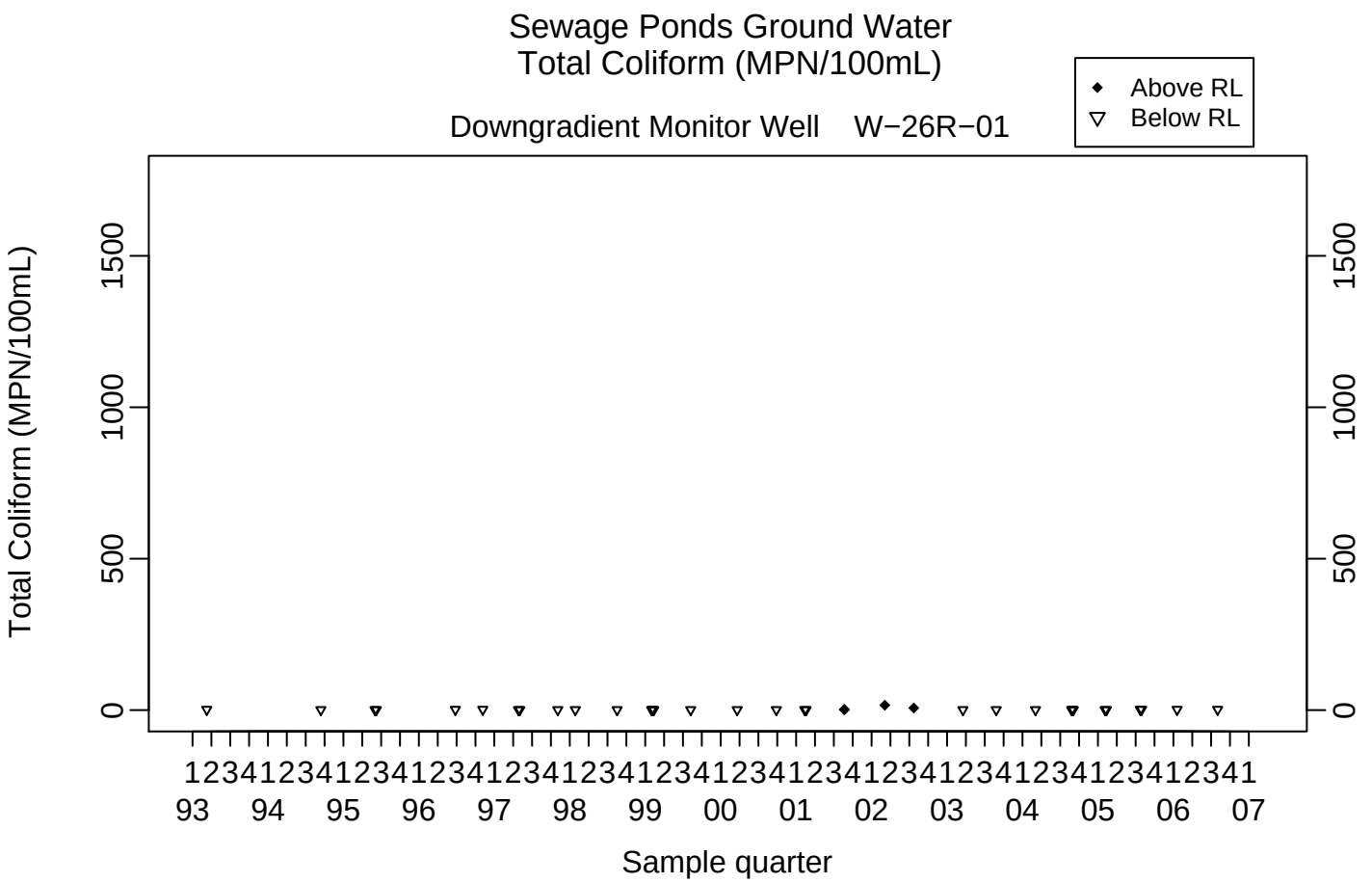


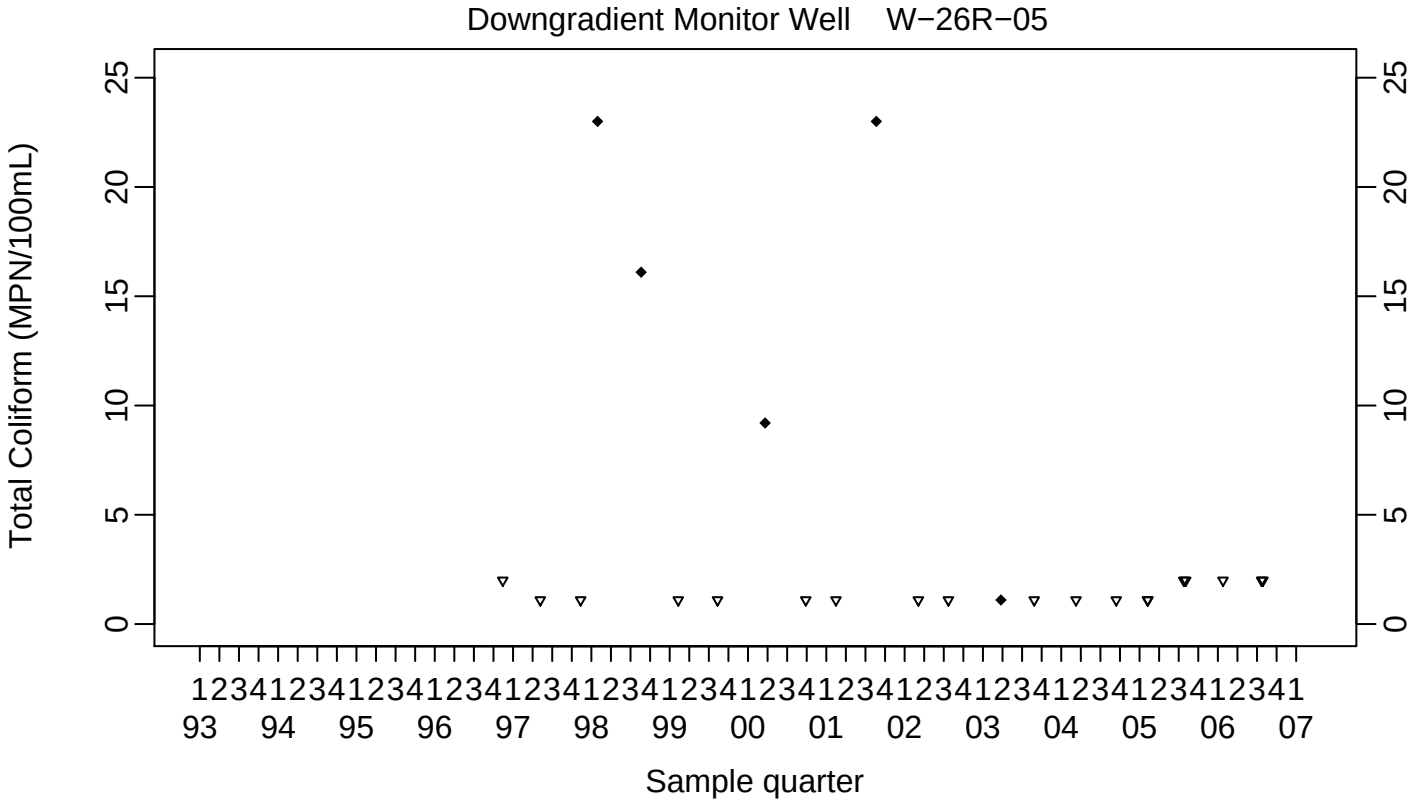

Sewage Ponds Ground Water
Total Coliform (MPN/100mL)
Above RL
Below RL
Upgradient Monitor Well W−7PS
Total Coliform (MPN/100mL)
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

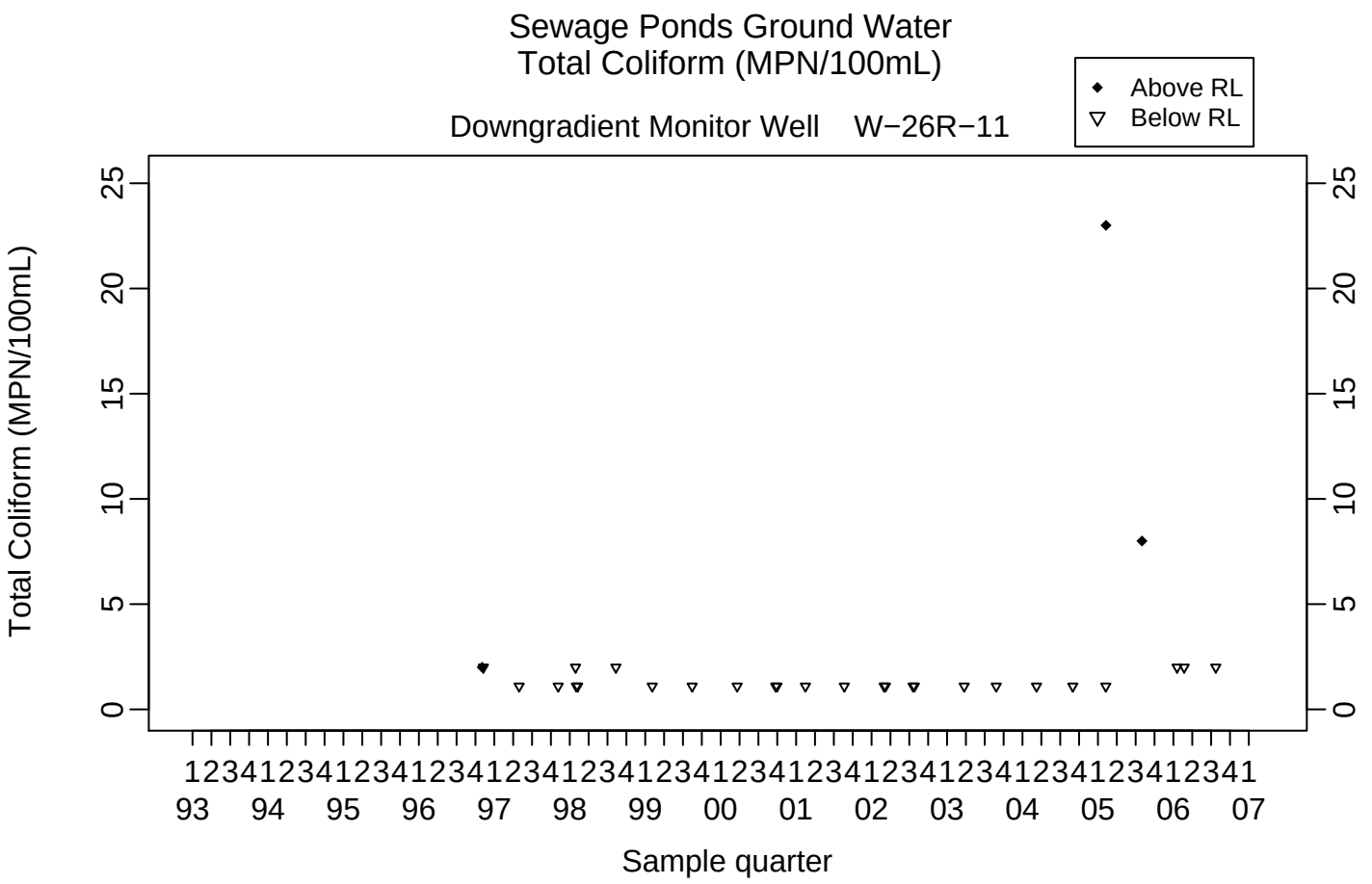

Crossgradient Monitor Well W−35A−04
Total Coliform (MPN/100mL)
0
2
4
6
8
10
12
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

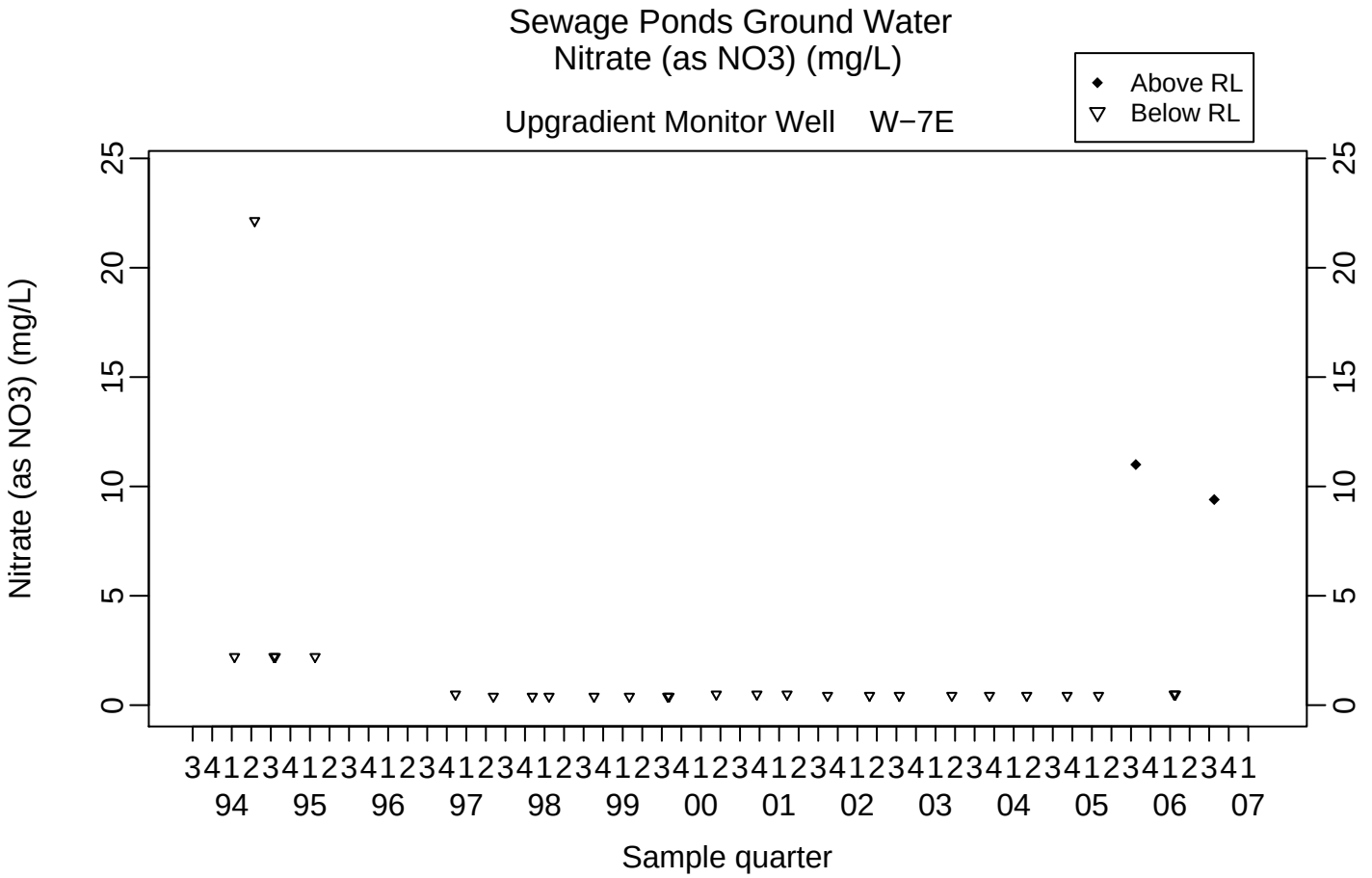

Sewage Ponds Ground Water
Total Coliform (MPN/100mL)
Above RL
Below RL
Downgradient Monitor Well W−7DS
Total Coliform (MPN/100mL)
0.0
0.5
1.0
1.5
2.0
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

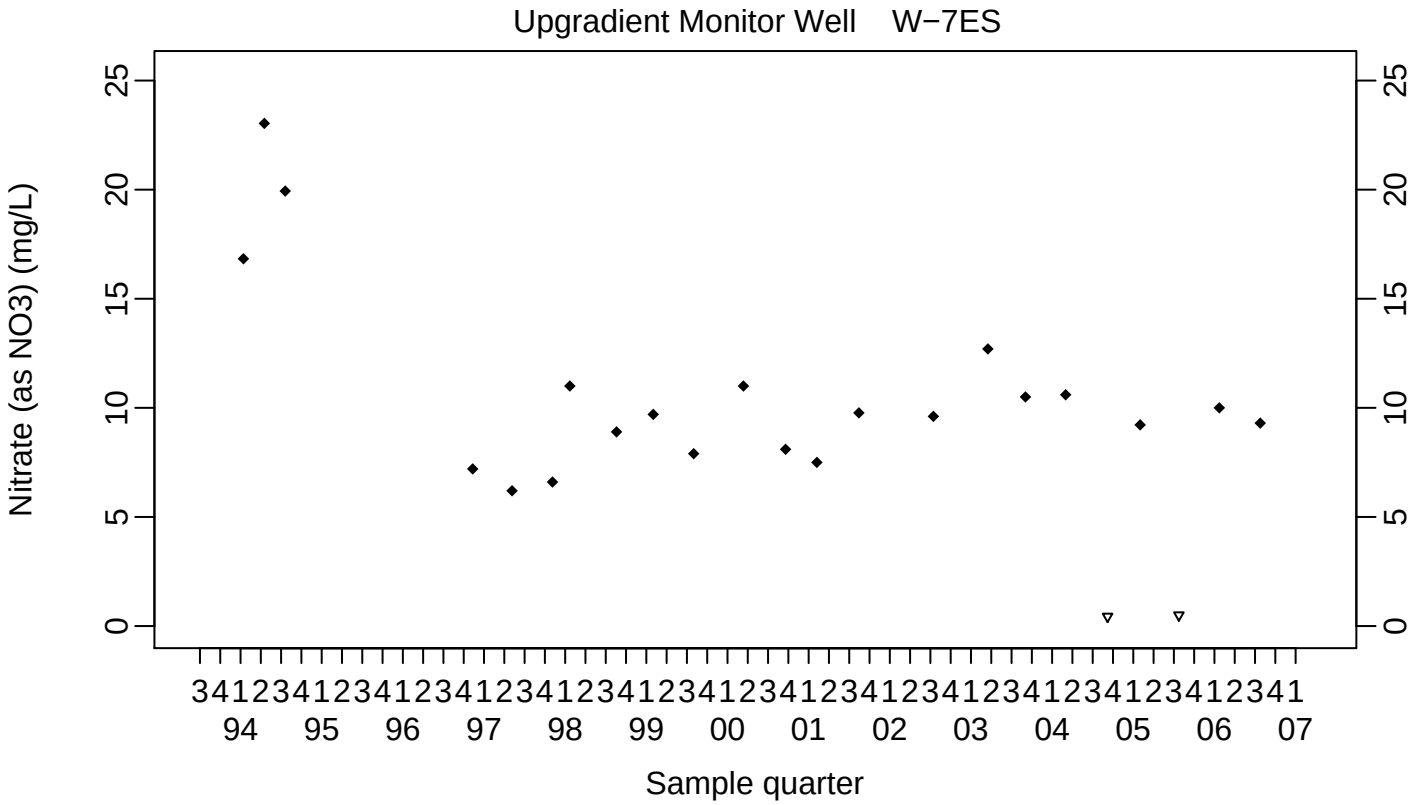

Downgradient Monitor Well W−25N−20
Total Coliform (MPN/100mL)
0.0
0.5
1.0
1.5
2.0
2.5
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

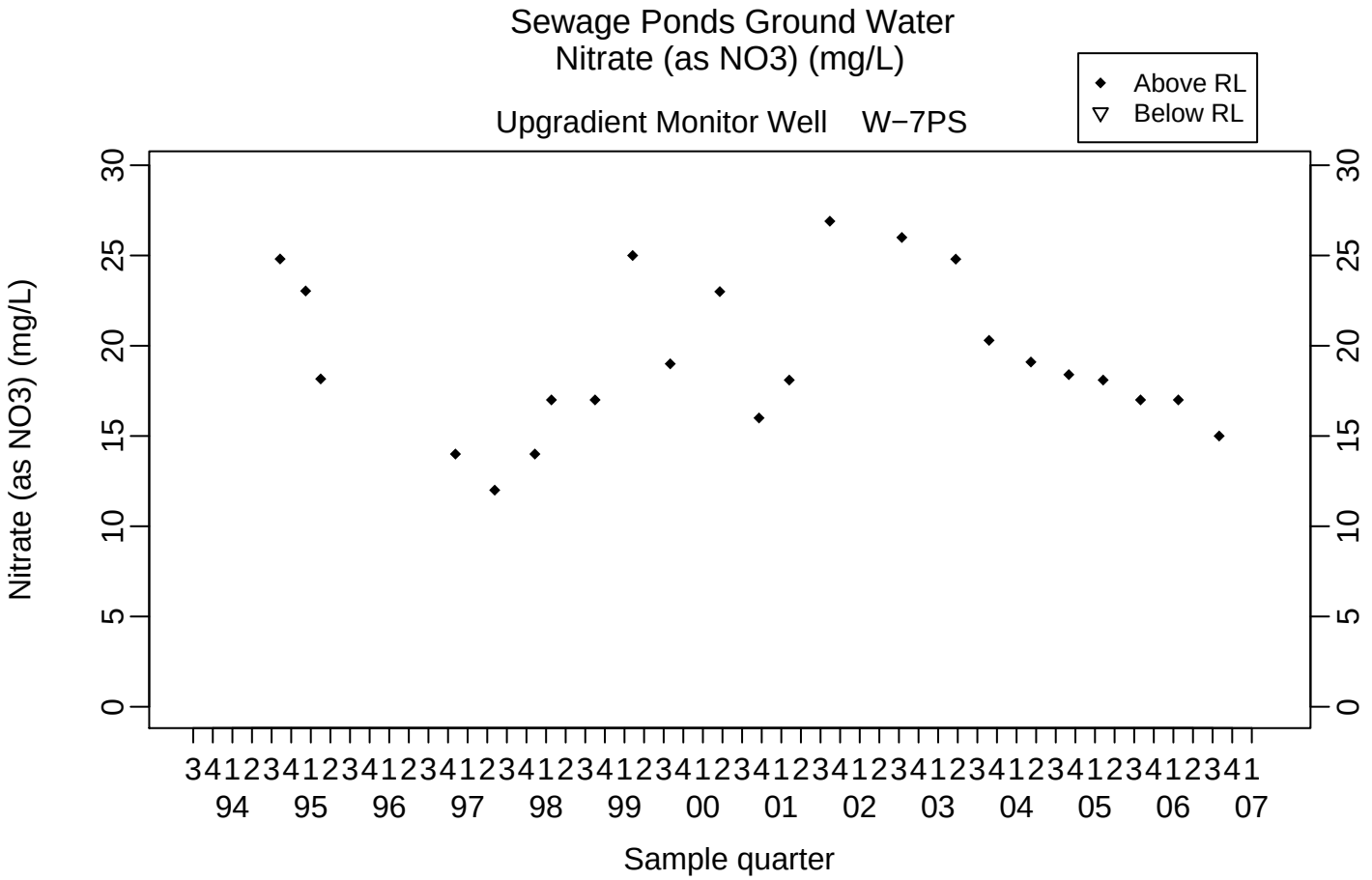

Sewage Ponds Ground Water
Total Coliform (MPN/100mL)
Above RL
Below RL
Downgradient Monitor Well W−26R−01
Total Coliform (MPN/100mL)
0
500
1000
1500
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

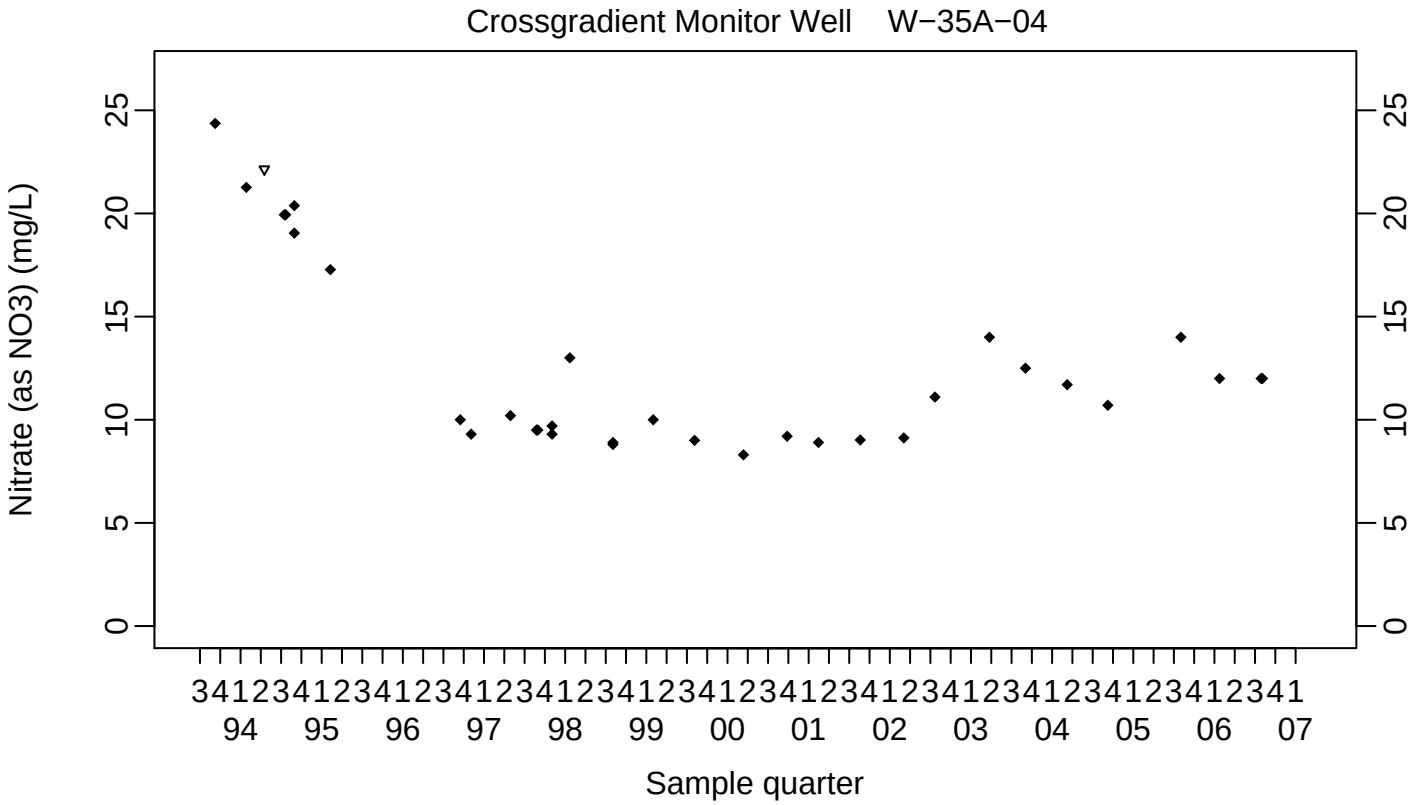

Downgradient Monitor Well W−26R−05
Total Coliform (MPN/100mL)
0
5
10
15
20
25
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

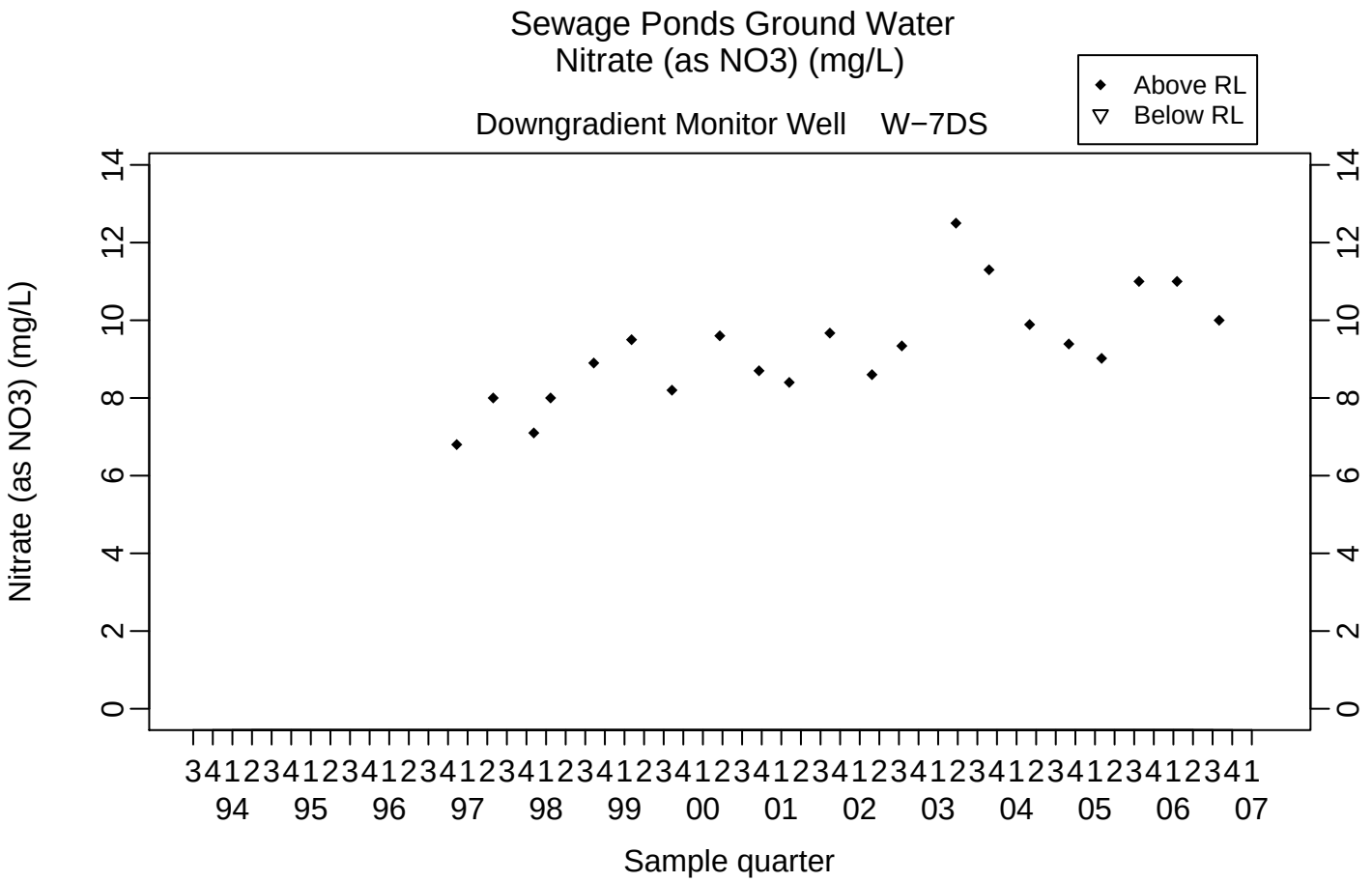

Sewage Ponds Ground Water
Total Coliform (MPN/100mL)
Downgradient Monitor Well W−26R−11
Above RL
Below RL
Total Coliform (MPN/100mL)
0
5
10
15
20
25
1234123412341234123412341234123412341234123412341234123412341
93 94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

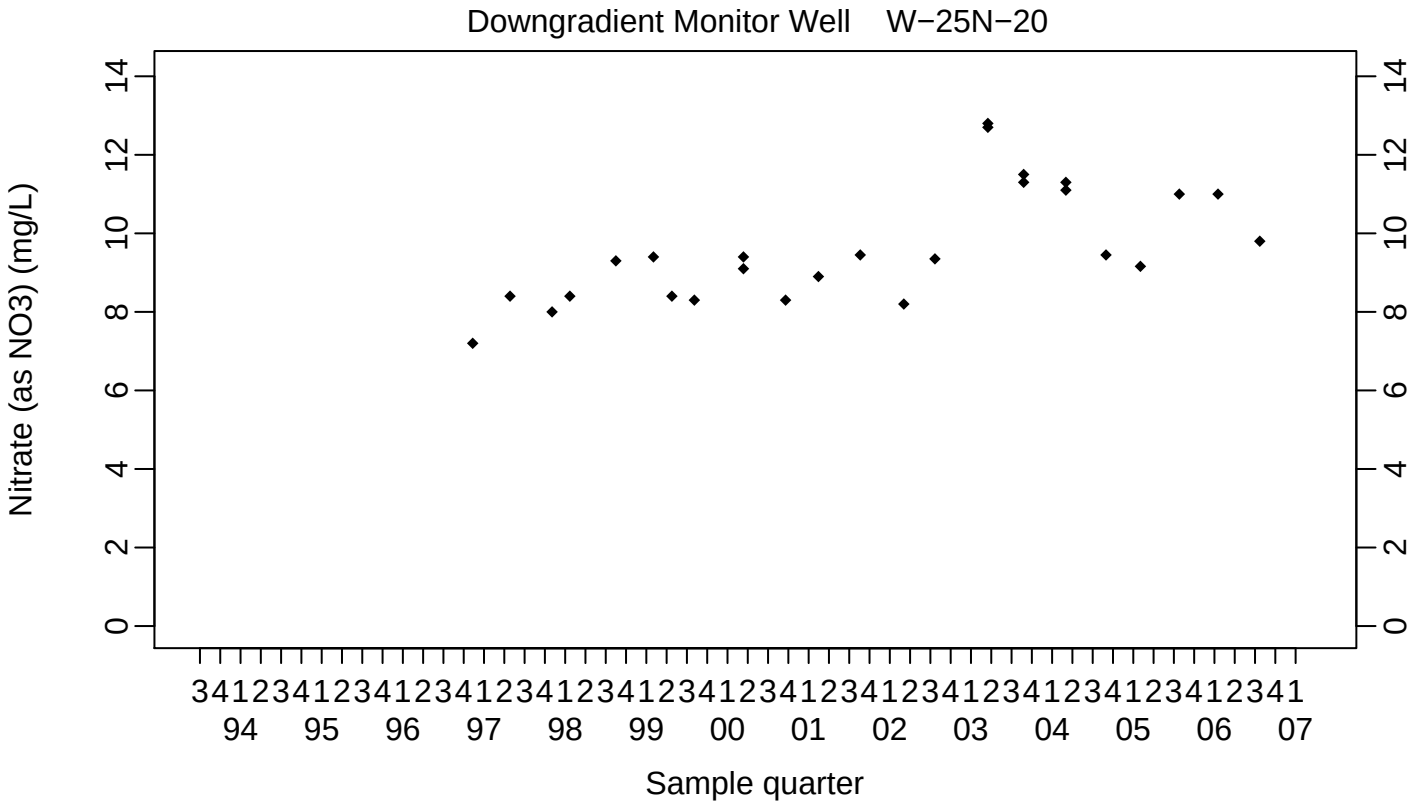

Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)
Above RL
Below RL
Upgradient Monitor Well W−7E
Nitrate (as NO3) (mg/L)
0
5
10
15
20
25
94
95
96
97
98
99
00
01
02
03
04
05
06
07
Sample quarter

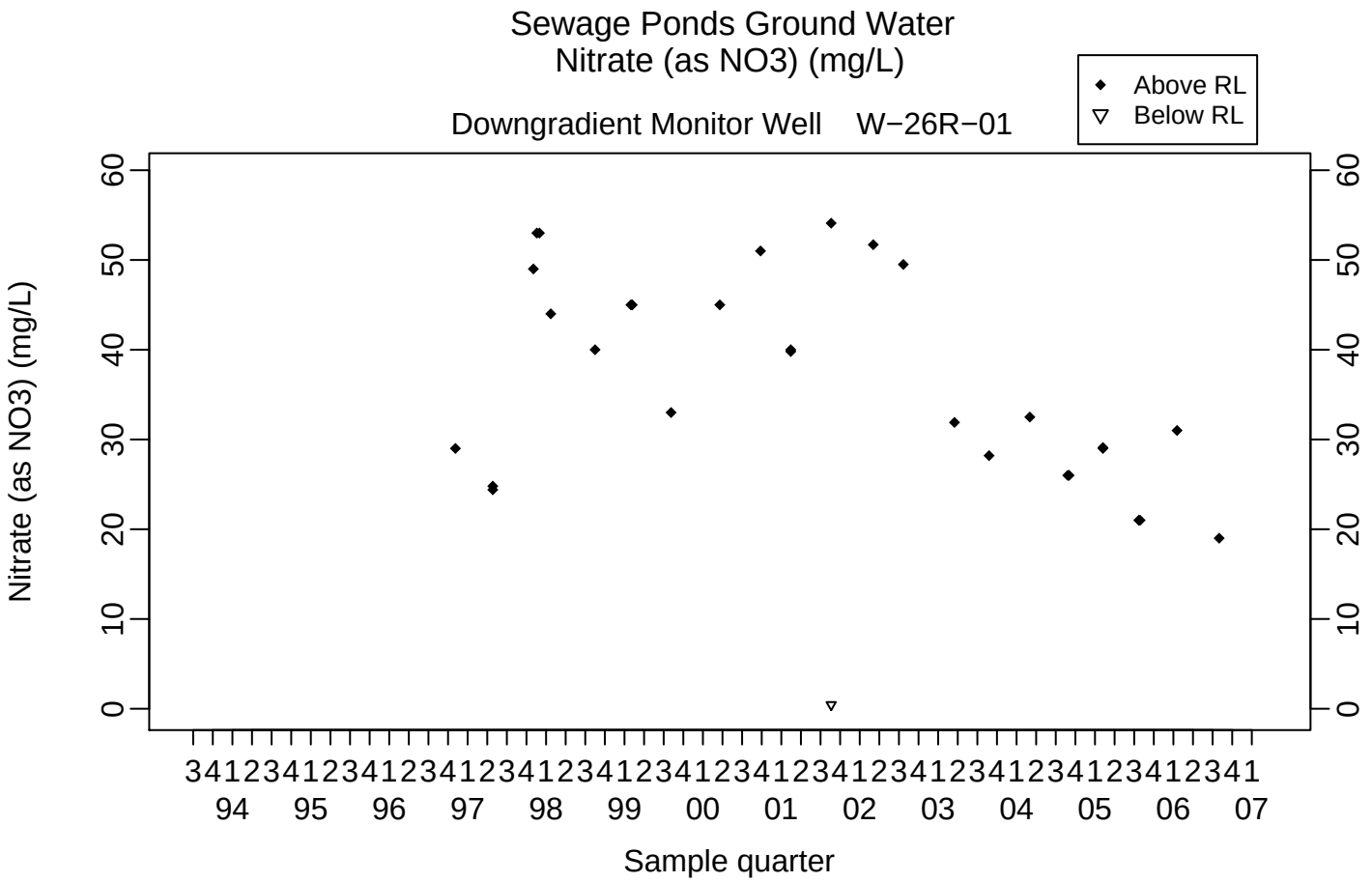

Upgradient Monitor Well W−7ES
Nitrate (as NO3) (mg/L)
0
5
10
15
20
25
94
95
96
97
98
99
00
01
02
03
04
05
06
07
Sample quarter

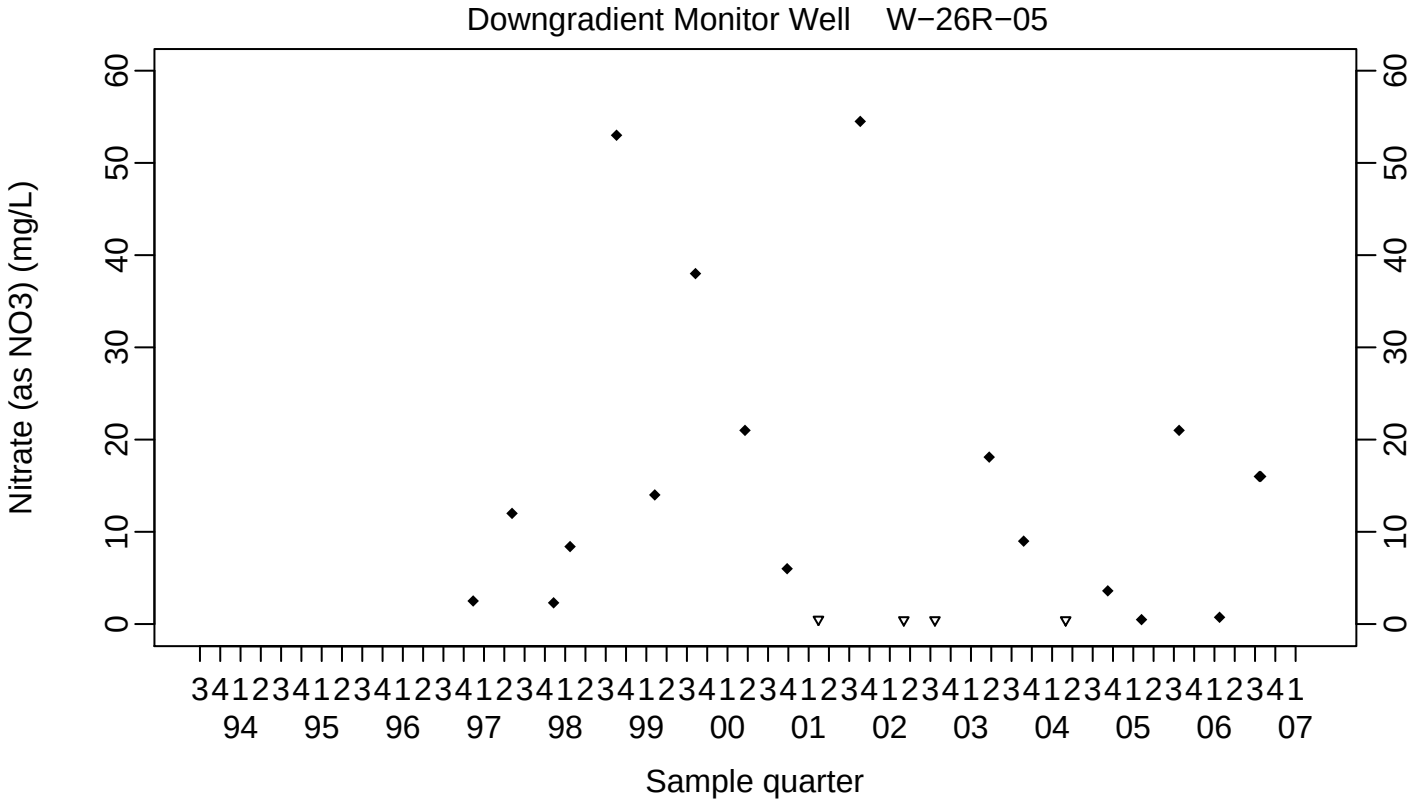

Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)
Above RL
Below RL
Upgradient Monitor Well W−7PS
Nitrate (as NO3) (mg/L)
0
5
10
15
20
25
30
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

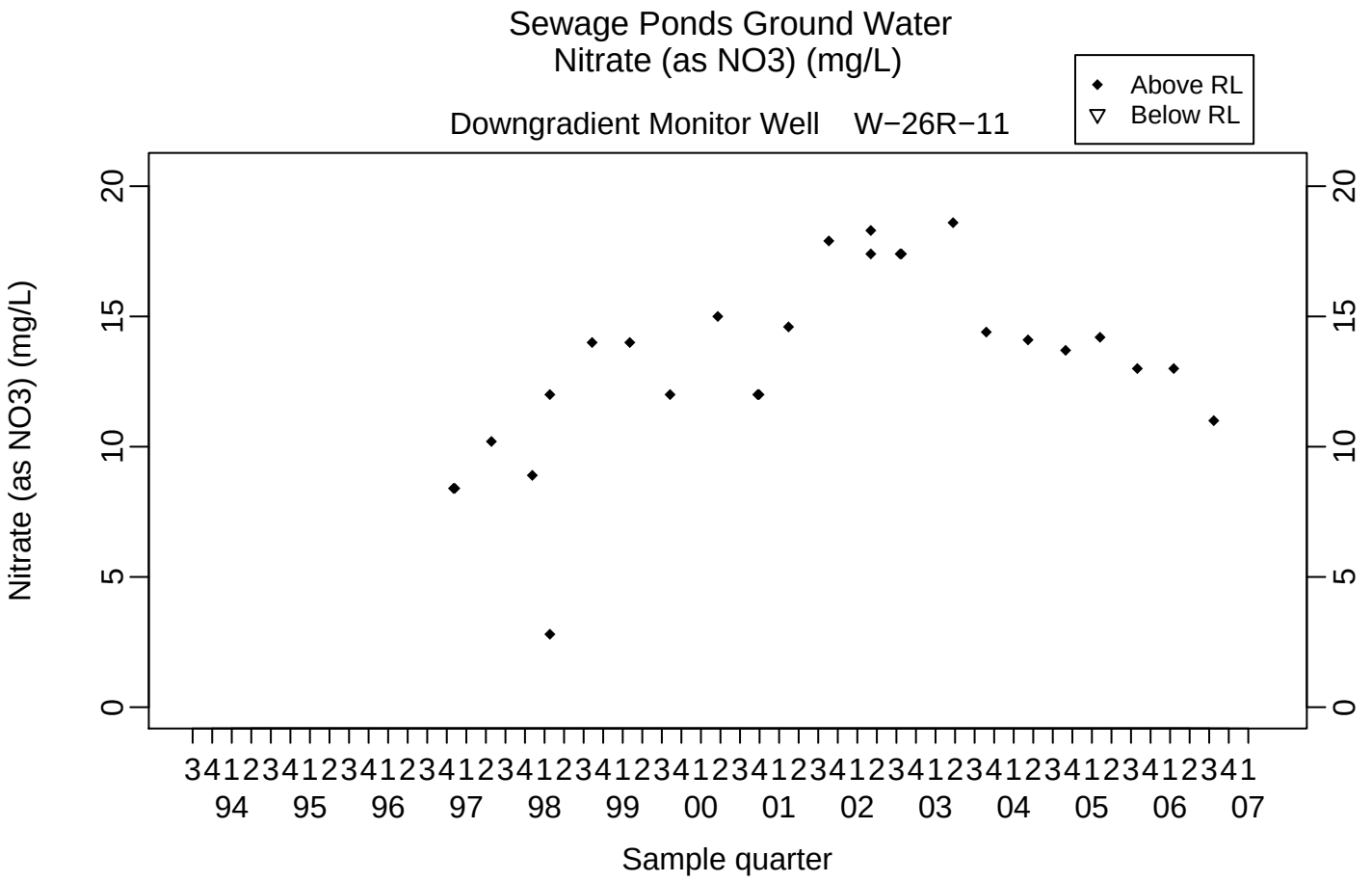

Crossgradient Monitor Well W−35A−04
Nitrate (as NO3) (mg/L)
0
5
10
15
20
25
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−7DS
Nitrate (as NO3) (mg/L)
0
2
4
6
8
10
12
14
3412341234123412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter


Downgradient Monitor Well W−25N−20
Nitrate (as NO3) (mg/L)
0
2
4
6
8
10
12
14
3412341234123412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter


Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−26R−01
Nitrate (as NO3) (mg/L)
0
10
20
30
40
50
60
Sample quarter
94
95
96
97
98
99
00
01
02
03
04
05
06
07


Downgradient Monitor Well W−26R−05
Nitrate (as NO3) (mg/L)
0
10
20
30
40
50
60
Sample quarter
94
95
96
97
98
99
00
01
02
03
04
05
06
07


Sewage Ponds Ground Water
Nitrate (as NO3) (mg/L)
Above RL
Below RL
Downgradient Monitor Well W−26R−11
Nitrate (as NO3) (mg/L)
0
5
10
15
20
3412341234123412341234123412341234123412341234123412341
94 95 96 97 98 99 00 01 02 03 04 05 06 07
Sample quarter

Annual Summary Table of Sewage Evaporation and Percolation Ponds Ground Water Monitoring Data

Table E-1. Sewage pond ground water semiannual monitoring results, 2006.

Parameter	Well	Permit limit	First quarter		Third quarter	
General				**(field)**		**(field)**
pH (pH units)	W-7E	None	8.53	8.55	8.18	8.33
	W-7ES	None	7.86	7.69	7.62	7.34
	W-7PS	None	8.12	7.35	8.02	7.37
	W-35A-04	None	8.17	7.68	8.10	7.48
	W-25N-20	None	7.98	7.60	7.91	7.49
	W-26R-01	None	8.13	7.72	8.14	7.60
	W-26R-05	None	8.16	7.98	7.91	7.73
	W-26R-11	None	8.01	7.60	7.71	7.42
	W-7DS	None	8.04	7.72	8.16	7.46
EC [a]	W-7E	1	1,500	1,506	1,500	1,485
	W-7ES	1	1,800	1,792	1,600	1,675
	W-7PS	1	1,600	1,581	1,700	1,743
	W-35A-04	1	1,700	1,753	1,700	1,660
	W-25N-20	1	1,700	1,755	1,600	1,652
	W-26R-01	1	1,500	1,478	1,400	1,461
	W-26R-05	1	1,100	1,135	1,300	1,290
	W-26R-11	1	1,700	1,672	1,700	1,660
	W-7DS	1	1,700	1,740	1,600	1,656
GWE [b]			**(meters)**	**(feet)**	**(meters)**	**(feet)**
	W-7E	None	150.351	493.15	151.29	496.22
	W-7ES	None	150.317	493.04	151.54	497.06
	W-7PS	None	150.040	492.13	151.20	495.95
	W-35A-04	None	149.973	491.91	151.11	495.64
	W-25N-20	None	149.534	490.47	150.67	494.20
	W-26R-01	None	149.619	490.75	150.66	494.18
	W-26R-05	None	149.534	490.47	150.64	494.10
	W-26R-11	None	149.713	491.06	150.88	494.88
	W-7DS	None	149.808	491.37	150.80	494.63

Table E-1. Sewage pond ground water semiannual monitoring results, 2006. (concluded)

Parameter	Well	Permit limit	First quarter		Third quarter	
Bacteria (MPN[c]/100 mL)						
Fecal coliform	W-7E	2.2	<2		<2	
	W-7ES	2.2	<2		<2	
	W-7PS	2.2	<2		<2	
	W-35A-04	2.2	<2		<2	
	W-25N-20	2.2	<2		<2	
	W-26R-01	2.2	<2		<2	
	W-26R-05	2.2	<2		<2	
	W-26R-11	2.2	<2		<2	
		2.2	<2		NA	
	W-7DS	2.2	<2		<2	
Total coliform	W-7E	None	<2		<2	
	W-7ES	None	<2		<2	
	W-7PS	None	<2		<2	
	W-35A-04	None	<2		<2	
	W-25N-20	None	<2		<2	
	W-26R-01	None	<2		<2	
	W-26R-05	None	<2		<2	
	W-26R-11	None	<2		<2	
		None	<2		NA	
	W-7DS	None	<2		<2	
Nutrients (mg/L)						
Nitrate (as NO3)	W-7E	None	<0.5		9.4	
	W-7ES	None	10		9.3	
	W-7PS	None	17		15	
	W-35A-04	None	12		12	
	W-25N-20	None	11		9.8	
	W-26R-01	None	31		19	
	W-26R-05	None	0.73		16	
	W-26R-11	None	13		11	
	W-7DS	None	11		10	

[a] EC = Electrical conductivity, or specific conductance

[b] GWE = Ground water elevation above mean sea level

[c] MPN = Most probable number (of organisms)

Appendix F

Fourth Quarter
Ground Water Elevation Contour Maps

Appendix F

Fourth Quarter Ground Water Elevation Contour Maps

F-1. References

V. Dibley, M. Taffet, J. Valett, M. Denton, S. Gregory, T. Carlsen, Z. Demir, W. Daily, D. Mason, P. McKereghan, R. Goodrich, and S. Chamberlain (2007), *2006 Annual Compliance Monitoring Report Lawrence Livermore National Laboratory Site 300*, Lawrence Livermore National Laboratory, Livermore, CA (UCRL-AR-XXXXXX-06) [a].

[a] Final report with current UCRL number will be available in March 2007; these figures are referenced from that report.

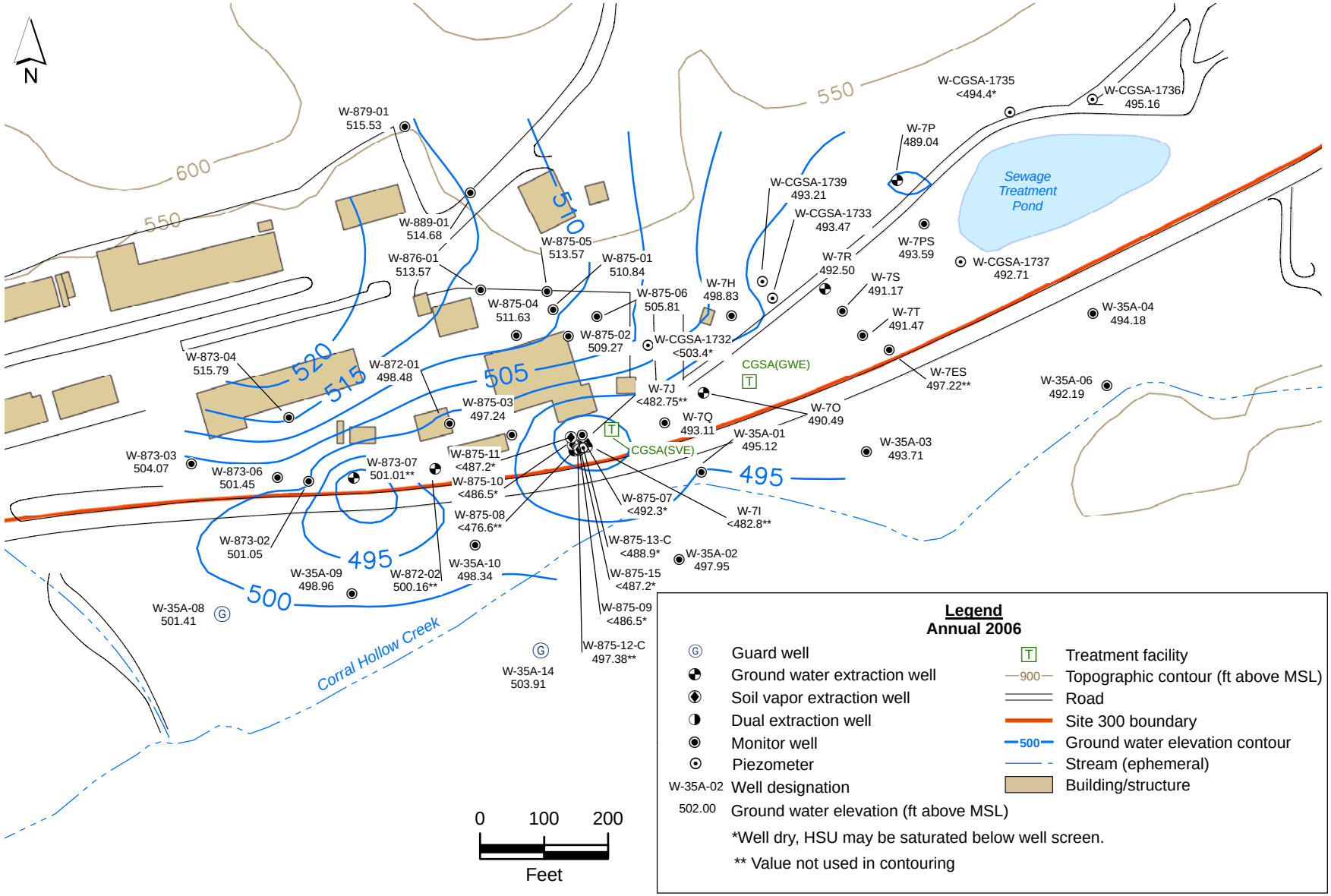


Figure 2.1-4. Central General Services Area OU ground water potentiometric surface map for the Qt-Tnsc$_1$ and Qal-Tnbs$_1$ HSUs.

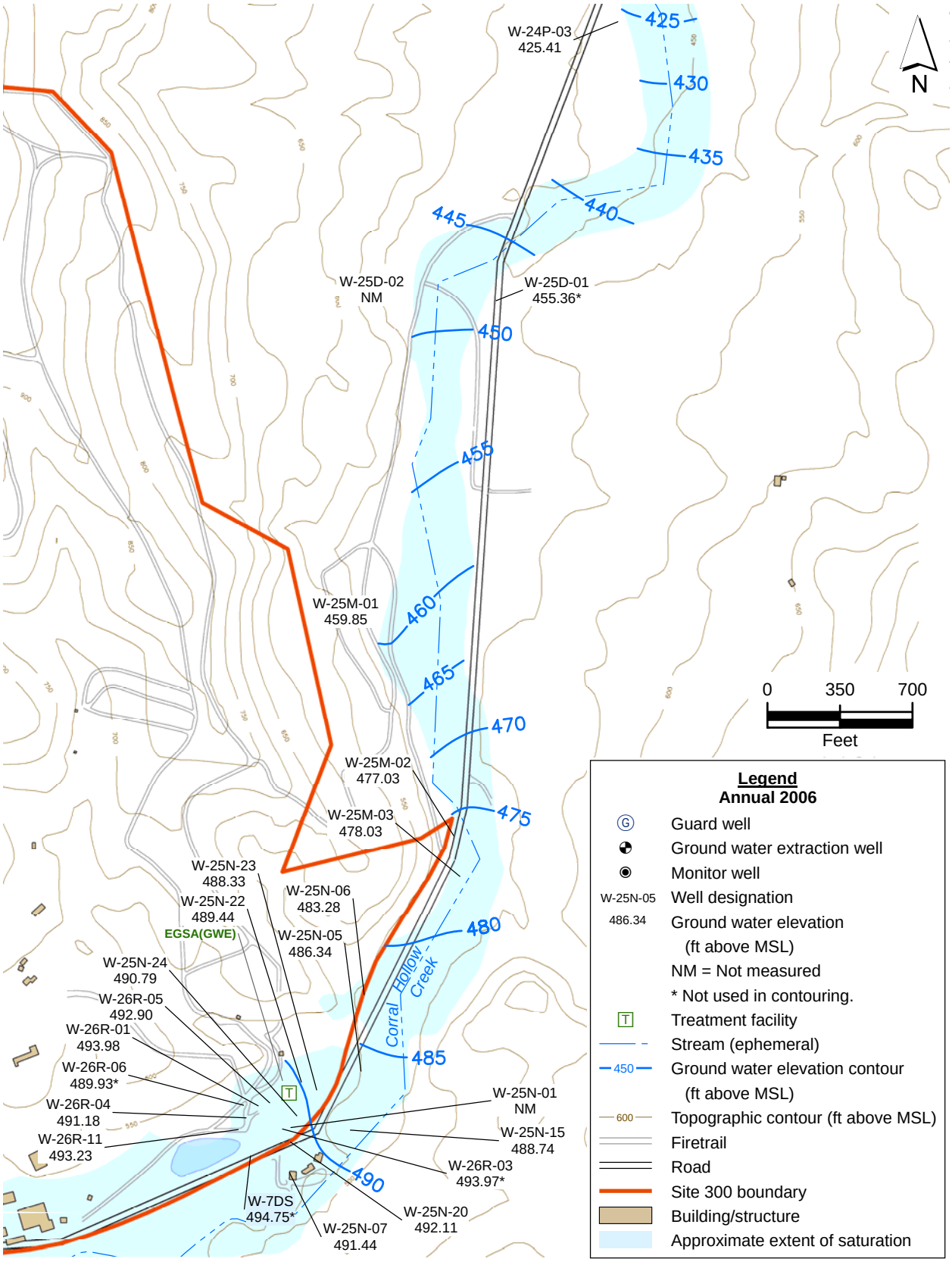


Figure 2.1-3. Eastern General Services Area OU ground water potentiometric surface map for the Qal-Tnbs$_1$ HSU.

Appendix G

Fourth Quarter Field Observation Logs Percolation Pits

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 10/04/2006 Inspector Art Phelan Building Number 806A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature John E Scott Date 10/4/06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 11/15/2006 Inspector Art Phelan Building Number 806A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature J. H. Elliott Date 11/15/06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 12/11/2006 Inspector Art Phelan Building Number 806A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature J. E. Scott Date 12/11/06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 10/11/06 Inspector Aaron Fontes Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	5"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. C. Carlson Date 10-11-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 10/11/06 Inspector Aaron Fontes Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	5"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. C. Peabody Date 10-11-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 10/11/06 Inspector Aaron Fontes Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	14"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K.C. Parker Date 10-11-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 10/11/06 Inspector Aaron Fontes Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	Dry
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. C. Carlson Date 10-11-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 11/13/06 Inspector Aaron Fontes Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K.C. Parker Date 11-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 11/13/06 Inspector Aaron Fontes Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	12"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature L.C. Parker Date 11-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 11/13/06 Inspector Aaron Fontes Building Number 827D

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	3"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. L. Parker Date 11-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 11/13/06 Inspector Aaron Fontes Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K.E. Peterson Date 11-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 12/13/06 Inspector Aaron Fontes Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. C. Pierson Date 12-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 12/13/06 Inspector Aaron Fontes Building Number 827C

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	16"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. C. Pierce Date 12-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 12/13/06 Inspector Aaron Fontes Building Number 827A

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	(Yes)/No	4"
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K.C. Rodman Date 12-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Monthly Percolation Pit Inspection Checklist*
For Buildings 827A, 827C, 827D, 827E and 806A
Waste Discharge Requirements Order Number 96-248

Date 12/13/06 Inspector Aaron Fontes Building Number 827E

Instructions: Circle the appropriate response for each item below, and record the date and time. Provide descriptions and comments if necessary. Attach additional paper if extra space is needed.

This record is to be maintained by the Inspecting Organization for a minimum of 5 years and made available by request of EPD or regulatory personnel.

Send a completed copy to the attention of Sandy Mathews, WGMG (L-627) of ORAD, EPD.

Check Items	Response	Description and Comments:
1. Is water flowing from the Christy box?	Yes/(No)	
2. Are there any signs of recent overflow (damp dirt around Christy box)?	Yes/(No)	
If yes is indicated to either 1 or 2, contact the EDO and WGMG (3-6679) immediately to arrange for reporting to the regulatory agency and sample collection.		
3. Is there standing water in the Christy box?	Yes/(No)	
If yes is indicated in 3, begin measuring and recording the water level and increase inspection frequency to weekly. Notify WGMG (3-6679).		
4. Are there any other indications that the percolation pit requires maintenance (e.g., excessive build up scale, accumulation of dirt or debris).	Yes/(No)	
If yes to any of the above, note date, actions taken, and type of repairs when made.		

Supervisor's Signature K. C. Richmond Date 12-13-06

* Note: This form may be modified or used as is for documenting the routine inspections of the percolation pits permitted under Waste Discharge Requirements Order Number 96-248.

Operations & Regulatory Affairs Division, Lawrence Livermore National Laboratory
University of California, P.O. Box 808, L-627, Livermore, California 94551